

RENEWAL APPLICATIONS FOR VPDES PERMIT
VA0090981

TO DISCHARGE TREATED WASTEWATER
AND STORM WATER ASSOCIATED WITH
INDUSTRIAL ACTIVITIES

ILUKA RESOURCES INC
VIRGINIA OPERATIONS
MINERAL SEPARATION PLANT
STONY CREEK, VA

July 2007

PRO

Please print or type in the unshaded areas only.

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CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal? <input checked="" type="checkbox"/> YES (complete the following table) <input type="checkbox"/> NO (go to Section III)								
1. OUTFALL NUMBER (list)	2. OPERATION(s) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		b. TOTAL VOLUME (specify with units)		c. DURATION (in days)
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
001	Zircon Finishing Plant Effluent (ZFP) Treatment Plant (ETP)	0.63 average	8 average	.04234	.05040	42,444 gpd	50,400 gpd	4
III. PRODUCTION								
A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility? <input type="checkbox"/> YES (complete Item III-B) <input checked="" type="checkbox"/> NO (go to Section IV)								
B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)? <input type="checkbox"/> YES (complete Item III-C) <input type="checkbox"/> NO (go to Section IV)								
C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.								
1. AVERAGE DAILY PRODUCTION							2. AFFECTED OUTFALLS (list outfall numbers)	
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)						
na	na	na					na	
IV. IMPROVEMENTS								
A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operations of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions. <input type="checkbox"/> YES (complete the following table) <input checked="" type="checkbox"/> NO (go to Item IV-B)								
1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE				
	a. NO.	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED			
na	na	na	na	na	na			
B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction. <input type="checkbox"/> MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED								

EPA I.D. NUMBER (copy from Item 1 of Form 1)

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V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding – Complete one set of tables for each outfall – Annotate the outfall number in the space provided.

NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
Zirconium	Zircon sand product. Zirconium and compounds containing Zirconium are believed absent due to the insolubility of zircon under the conditions it is subjected to in the MSP and ZFP.		
Iron	Iron is present as a naturally occurring oxide coating on zircon grains. The purpose of the ZFP is to remove this coating. Most of this iron is precipitated out with the gypsum in the ETP. Samples from outfall 001 have been analyzed for iron. Results can be found in this form and in Appendix 3 as Item 2.		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES (list all such pollutants below)☒ NO (go to Item VI-B)

VII. BIOLOGICAL TOXICITY TESTING DATA

☒ YES (identify the test(s) and describe their purposes below)

☐ NO (go to Section VIII)

VIII. CONTRACT ANALYSIS INFORMATION

☒ YES (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

☐ NO (go to Section IX)IX. CERTIFICATION

A. NAME & OFFICIAL TITLE (*type or print*)

NAME & OFFICIAL TITLE (type or print) *ALLAN R. SALO* *PRESIDENT*

B. PHONE NO. (area code & no.)

1 434 348 4302

C. SIGNATURE

12th

D. DATE SIGNED

7/21/07

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.
SEE INSTRUCTIONS.

EPA ID. NUMBER (copy from Item 1 of Form 1)
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V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)										OUTFALL NO. 001		
PART A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.												
1. POLLUTANT		2. EFFLUENT				3. UNITS (specify if blank)				4. INTAKE (optional)		
		a. MAXIMUM DAILY VALUE (1) CONCENTRATION (2) MASS		b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION (2) MASS		c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION (2) MASS		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION (2) MASS	b. NO. OF ANALYSES
a. Biochemical Oxygen Demand (BOD)		< 3.0								mg/L		
b. Chemical Oxygen Demand (COD)		22.1								mg/L		
c. Total Organic Carbon (TOC)		5.38								mg/L		
d. Total Suspended Solids (TSS)		52.8					19.06		7	mg/L		
e. Ammonia (as N)		0.27					0.115		4	mg/L		
f. Flow		VALUE 35 gpm		VALUE na		VALUE 29.4 gpm			14		VALUE	
g. Temperature (winter)		VALUE 7.3		VALUE na		VALUE na				°C	VALUE	
h. Temperature (summer)		VALUE 35.5		VALUE na		VALUE na				°C	VALUE	
i. pH		MINIMUM 6.15	MAXIMUM 7.06	MINIMUM 6.02	MAXIMUM 8.96					STANDARD UNITS		

PART B – Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. (if available)		2. MARK "X"		3. EFFLUENT				4. UNITS				5. INTAKE (optional)	
		a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION (2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION (2) MASS	b. NO. OF ANALYSES		
a. Bromide (24959-67-9)			X										
b. Chlorine, Total Residual			X										
c. Color			X										
d. Fecal Coliform				2						MPN/100mL			
e. Fluoride (16984-48-8)			X										
f. Nitrate-Nitrite (as N)			X							mg/L			

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)		<input checked="" type="checkbox"/>										
h. Oil and Grease		<input checked="" type="checkbox"/>										
i. Phosphorus (as P), Total (7723-14-0)		<input checked="" type="checkbox"/>										
j. Radioactivity												
(1) Alpha, Total	<input checked="" type="checkbox"/>		6.0 ± 0.7				1	pCi/L				
(2) Beta, Total	<input checked="" type="checkbox"/>		21 ± 3				1	pCi/L				
(3) Radium, Total		<input checked="" type="checkbox"/>										
(4) Radium 226, Total		<input checked="" type="checkbox"/>										
k. Sulfate (as SO ₄) (14808-79-8)		<input checked="" type="checkbox"/>										
l. Sulfide (as S)		<input checked="" type="checkbox"/>										
m. Sulfite (as SO ₃) (14265-45-3)		<input checked="" type="checkbox"/>										
n. Surfactants		<input checked="" type="checkbox"/>										
o. Aluminum, Total (7429-90-5)		<input checked="" type="checkbox"/>										
p. Barium, Total (7440-39-3)		<input checked="" type="checkbox"/>										
q. Boron, Total (7440-42-8)		<input checked="" type="checkbox"/>										
r. Cobalt, Total (7440-48-4)		<input checked="" type="checkbox"/>										
s. Iron, Total (7439-89-6)	<input checked="" type="checkbox"/>		0.364				2	mg/L				
t. Magnesium, Total (7439-95-4)		<input checked="" type="checkbox"/>										
u. Molybdenum, Total (7439-98-7)		<input checked="" type="checkbox"/>										
v. Manganese, Total (7439-96-5)		<input checked="" type="checkbox"/>										
w. Tin, Total (7440-31-5)		<input checked="" type="checkbox"/>										
x. Titanium, Total (7440-32-6)		<input checked="" type="checkbox"/>										

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
VA0090981	001

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1)	b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
					(1) CONCENTRATION	(2) MASS					(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS													
1M. Antimony, Total (7440-36-0)	X			<0.100					1	mg/L			
2M. Arsenic, Total (7440-38-2)	X			<0.050					1	mg/L			
3M. Beryllium, Total (7440-41-7)			X										
4M. Cadmium, Total (7440-43-9)	X			<0.010					1	mg/L			
5M. Chromium, Total (7440-47-3)	X			<0.020					1	mg/L			
6M. Copper, Total (7440-50-8)	X			<0.020					1	mg/L			
7M. Lead, Total (7439-92-1)	X			<0.005					3	mg/L			
8M. Mercury, Total (7439-97-6)	X			<0.0002					1	mg/L			
9M. Nickel, Total (7440-02-0)	X			0.021					2	mg/L			
10M. Selenium, Total (7782-49-2)	X			0.064					2	mg/L			
11M. Silver, Total (7440-22-4)	X			<0.020					1	mg/L			
12M. Thallium, Total (7440-28-0)	X			<0.020					1	mg/L			
13M. Zinc, Total (7440-66-6)	X			0.044					2	mg/L			
14M. Cyanide, Total (57-12-5)	X			<0.010					1	mg/L			
15M. Phenols, Total			X										
DIOXIN													
2,3,7,8-Tetra-chlorodibenzo-P-dioxin (1764-01-6)	X			DESCRIBE RESULTS Below detection limit of 10 µg/L.									

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CONTINUE ON REVERSE

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	b. NO. OF ANALYSES
					(1) CONCENTRATION	(2) MASS						
GC/MS FRACTION - VOLATILE COMPOUNDS												
1V. Acrolein (107-02-8)	X			<5					1	µg/L		
2V. Acrylonitrile (107-13-1)	X			<5					1	µg/L		
3V. Benzene (71-43-2)	X			<5					1	µg/L		
4V. Bis (Chloro-methyl) Ether (542-88-1)			X									
5V. Bromoform (75-25-2)	X			<5					1	µg/L		
6V. Carbon Tetrachloride (56-23-5)	X			<5					1	µg/L		
7V. Chlorobenzene (108-90-7)	X			<5					1	µg/L		
8V. Chloro-dibromomethane (124-48-1)	X			<5					1	µg/L		
9V. Chloroethane (75-00-3)			X									
10V. 2-Chloro-ethylvinyl Ether (110-75-8)			X									
11V. Chloroform (67-66-3)	X			<5					1	µg/L		
12V. Dichloro-bromomethane (75-27-4)	X			<5					1	µg/L		
13V. Dichloro-difluoromethane (75-71-8)			X									
14V. 1,1-Dichloro-ethane (75-34-3)	X			<5					1	µg/L		
15V. 1,2-Dichloro-ethane (107-06-2)	X			<5					1	µg/L		
16V. 1,1-Dichloro-ethylene (75-35-4)	X			<5					1	µg/L		
17V. 1,2-Dichloro-propane (78-87-5)	X			<5					1	µg/L		
18V. 1,3-Dichloro-propylene (542-75-6)	X			<5					1	µg/L		
19V. Ethylbenzene (100-41-4)	X			<5					1	µg/L		
20V. Methyl Bromide (74-83-9)	X			<5					1	µg/L		
21V. Methyl Chloride (74-87-3)			X									

CONTINUED FROM PAGE V-4

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)		b. NO. OF ANALYSES	
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1)		(2) MASS
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS						
GC/MS FRACTION – VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)			X												
23V. 1,1,2,2-Tetrachloroethane (79-34-5)	X			<5						1	µg/L				
24V. Tetrachloroethylene (127-18-4)	X			<5						1	µg/L				
25V. Toluene (108-88-3)	X			<5						1	µg/L				
26V. 1,2-Trans-Dichloroethylene (156-60-5)	X			<5						1	µg/L				
27V. 1,1,1-Trichloroethane (71-55-6)			X												
28V. 1,1,2-Trichloroethane (79-00-5)	X			<5						1	µg/L				
29V Trichloroethylene (79-01-6)	X			<5						1	µg/L				
30V. Trichlorofluoromethane (75-69-4)			X												
31V. Vinyl Chloride (75-01-4)	X			<5						1	µg/L				
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)	X			<10						1	µg/L				
2A. 2,4-Dichlorophenol (120-83-2)	X			<10						1	µg/L				
3A. 2,4-Dimethylphenol (105-67-9)	X			<10						1	µg/L				
4A. 4,6-Dinitro-O-Cresol (534-52-1)			X												
5A. 2,4-Dinitrophenol (51-28-5)			X												
6A. 2-Nitrophenol (88-75-5)			X												
7A. 4-Nitrophenol (100-02-7)			X												
8A. P-Chloro-M-Cresol (59-50-7)			X												
9A. Pentachlorophenol (87-86-5)	X			<10						1	µg/L				
10A. Phenol (108-95-2)	X			<10						1	µg/L				
11A. 2,4,6-Trichlorophenol (88-05-2)	X			<10						1	µg/L				

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1. POLLUTANT AND CAS NUMBER (if available)		2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)				
		a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES	
					(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS		
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS																	
1B. Acenaphthene (83-32-9)		X			<10									1	µg/L		
2B. Acenaphthylene (208-96-8)				X													
3B. Anthracene (120-12-7)		X			<10									1	µg/L		
4B. Benzidine (92-87-5)		X			<10									1	µg/L		
5B. Benzo (a) Anthracene (56-55-3)		X			<10									1	µg/L		
6B. Benzo (a) Pyrene (50-32-8)		X			<10									1	µg/L		
7B. 3,4-Benzo-fluoranthene (205-99-2)		X			<10									1	µg/L		
8B. Benzo (ghi) Perylene (191-24-2)				X													
9B. Benzo (k) Fluoranthene (207-08-9)		X			<10									1	µg/L		
10B. Bis (2-Chloro-ethoxy) Methane (111-91-1)				X													
11B. Bis (2-Chloro-ethyl) Ether (111-44-4)		X			<10									1	µg/L		
12B. Bis (2-Chloroisopropyl) Ether (102-80-1)		X			<10									1	µg/L		
13B. Bis (2-Ethyl-hexyl) Phthalate (117-81-7)				X													
14B. 4-Bromophenyl Phenyl Ether (101-55-3)				X													
15B. Butyl Benzyl Phthalate (85-68-7)				X													
16B. 2-Chloro-naphthalene (91-58-7)		X			<10									1	µg/L		
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)				X													
18B. Chrysene (218-01-9)		X			<10									1	µg/L		
19B. Dibenzo (a,h) Anthracene (53-70-3)		X			<10									1	µg/L		
20B. 1,2-Dichloro-benzene (95-50-1)		X			<10									1	µg/L		
21B. 1,3-Di-chloro-benzene (541-73-1)		X			<10									1	µg/L		

CONTINUED FROM PAGE V-6

1. POLLUTANT AND CAS NUMBER (if available)		2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
		a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES		
					(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS			
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)																
22B. 1,4-Dichlorobenzene (106-46-7)		X			<10							1	µg/L			
23B. 3,3-Dichlorobenzidine (91-94-1)		X			<20							1	µg/L			
24B. Diethyl Phthalate (84-66-2)		X			<10							1	µg/L			
25B. Dimethyl Phthalate (131-11-3)		X			<10							1	µg/L			
26B. Di-N-Butyl Phthalate (84-74-2)		X			<10							1	µg/L			
27B. 2,4-Dinitrotoluene (121-14-2)		X			<10							1	µg/L			
28B. 2,6-Dinitrotoluene (606-20-2)				X												
29B. Di-N-Octyl Phthalate (117-84-0)				X												
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)		X			<10							1	µg/L			
31B. Fluoranthene (206-44-0)		X			<10							1	µg/L			
32B. Fluorene (86-73-7)		X			<10							1	µg/L			
33B. Hexachlorobenzene (118-74-1)		X			<10							1	µg/L			
34B. Hexachlorobutadiene (87-68-3)		X			<10							1	µg/L			
35B. Hexachlorocyclopentadiene (77-47-4)		X			<10							1	µg/L			
36B. Hexachloroethane (67-72-1)		X			<10							1	µg/L			
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)		X			<20							1	µg/L			
38B. Isophorone (78-59-1)		X			<10							1	µg/L			
39B. Naphthalene (91-20-3)		X			<10							1	µg/L			
40B. Nitrobenzene (98-95-3)		X			<10							1	µg/L			
41B. N-Nitrosodimethylamine (62-75-9)		X			<10							1	µg/L			
42B. N-Nitrosodi-N-Propylamine (621-64-7)		X			<10							1	µg/L			

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CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE		c. LONG TERM AVRG. VALUE (if available)	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					(1) CONCENTRATION
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)												
43B. N-Nitro-sodiphenylamine (86-30-6)	X											
44B. Phenanthrene (85-01-8)			X									
45B. Pyrene (129-00-0)	X											
46B. 1,2,4-Tri-chlorobenzene (120-82-1)	X											
GC/MS FRACTION – PESTICIDES												
1P. Aldrin (309-00-2)	X											
2P. α-BHC (319-84-6)	X											
3P. β-BHC (319-85-7)	X											
4P. γ-BHC (58-89-9)	X											
5P. δ-BHC (319-86-8)	X											
6P. Chlordane (57-74-9)	X											
7P. 4,4'-DDT (50-29-3)	X											
8P. 4,4'-DDE (72-55-9)	X											
9P. 4,4'-DDD (72-54-8)	X											
10P. Dieldrin (60-57-1)	X											
11P. α-Endosulfan (115-29-7)	X											
12P. β-Endosulfan (115-29-7)	X											
13P. Endosulfan Sulfate (1031-07-8)	X											
14P. Endrin (72-20-8)	X											
15P. Endrin Aldehyde (7421-93-4)	X											
16P. Heptachlor (76-44-8)	X											

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CONTINUE ON PAGE V-9

EPA I.D. NUMBER (copy from Item 1 of Form I)	OUTFALL NUMBER
VA0090981	001

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1)	b. MAXIMUM 30 DAY VALUE (if available) (1)	c. LONG TERM AVRG. VALUE (if available) (1)	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	b. NO. OF ANALYSES	
GC/MS FRACTION – PESTICIDES (continued)												
17P. Heptachlor Epoxide (1024-57-3)	X			<0.50			1	µg/L				
18P. PCB-1242 (53469-21-9)	X			<1.00			2	µg/L				
19P. PCB-1254 (11097-69-1)	X			<1.00			2	µg/L				
20P. PCB-1221 (11104-28-2)	X			<1.00			2	µg/L				
21P. PCB-1232 (11141-16-5)	X			<1.00			2	µg/L				
22P. PCB-1248 (12672-29-6)	X			<1.00			2	µg/L				
23P. PCB-1260 (11096-82-5)	X			<1.00			2	µg/L				
24P. PCB-1016 (12674-11-2)	X			<1.00			2	µg/L				
25P. Toxaphene (8001-35-2)	X			<5.00			1	µg/L				

Continue on Page 2

Continued from the Front

IV. Narrative Description of Pollutant Sources

A. For each outfall, provide an estimate of the area (include units) of impervious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)	Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)
002	5.5 ACRES	11.85 ACRES			

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas, and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.


PLEASE REFER TO APPENDIX 2, DOCUMENT 2.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
002	Outfall 002 is fed from the MSP's Storm Water collection pond (Retention Pond 3) which provides approximately 2.5 hours of retention and settling time for suspended solids during the 1 hr/25 year storm event (see Appendix 4 for calculation). Outfall 002 consists of a poured concrete level spreader with weir.	1-U

V. Nonstormwater Discharges

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharged from these outfall(s) are identified in either an accompanying Form 2C or Form 2E application for the outfall.

Name and Official Title (type or print)	Signature	Date Signed
ALAN R SALO RESIDENT		7/21/07

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

All process water lines are accounted for at the site. No testing was deemed necessary.

VI. Significant Leaks or Spills

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

NA

Continued from Page 2

EPA ID Number (copy from Item 1 of Form 1)
VA0090981**VII. Discharge Information**

A, B, C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided.
Table VII-A, VII-B, VII-C are included on separate sheets numbers VII-1 and VII-2.

E. Potential discharges not covered by analysis – is any toxic pollutant listed in table 2F-2, 2F-3, or 2F-4, a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☒ Yes (list all such pollutants below)☐ No (go to Section IX)

Titanium, Sulfite*, Sulfate, Zirconium**, Oil and Grease.

* Sulfite could potentially form from the use of Sulfuric Acid in the ZFP. No testing has been conducted for sulfite as it is believed absent. Sulfite readily oxidizes to sulfate in the oxygenated environment typical of surface waters. Testing has been conducted for the presence of sulfate.

** Zirconium is a constituent of the zircon sand product produced by the MSP as well as the raw mineral sand concentrate. No testing has been conducted for Zirconium. It is believed absent due to the insolubility of zircon under the conditions present at the MSP and ZFP.

VIII. Biological Toxicity Testing Data

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ Yes (list all such pollutants below)☒ No (go to Section IX)**IX. Contract Analysis Information**

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

☒ Yes (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)☐ No (go to Section X)

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
Primary Laboratories	7423 Lee Davis Road Mechanicsville, VA 23111	804-559-9004	See APPENDIX 3, ITEM 3
FROEHLING & ROBERTSON, INC.	3015 DUMBARTON ROAD RICHMOND, VA 23261	804-264-2701	

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title (Type Or Print)

ALVIN R. SALE - PRESIDENT

B. Area Code and Phone No.

1 434 348 4302

C. Signature



D. Date Signed

7/21/07

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Part B — List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

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Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
na	na	na	na	na	na

7. Provide a description of the method of flow measurement or estimate.

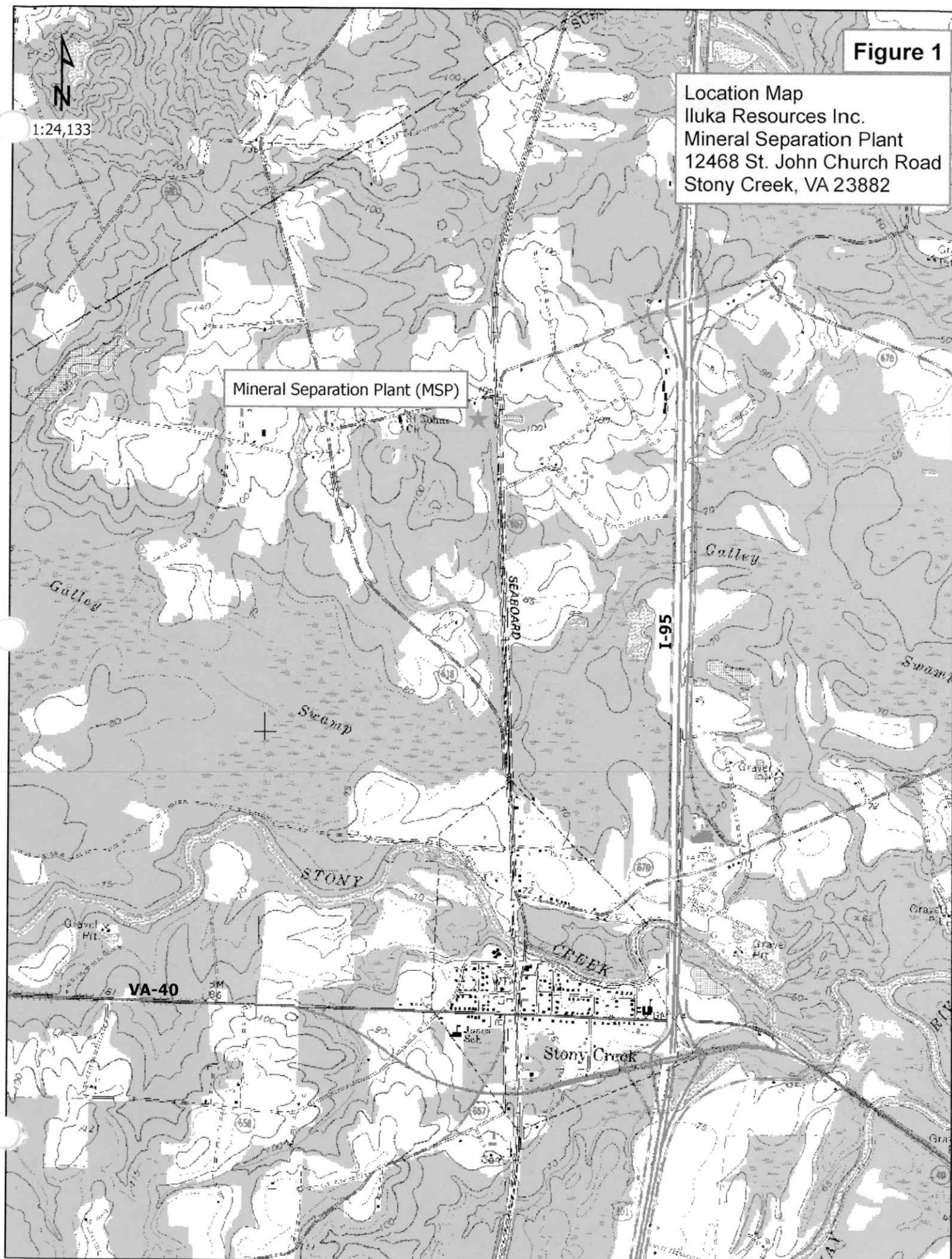
A hand held electronic flow meter is used to obtain the velocity of the flow leaving the outfall, this is multiplied by the depth of the water passing through the outfall to obtain an estimated volume of discharge.

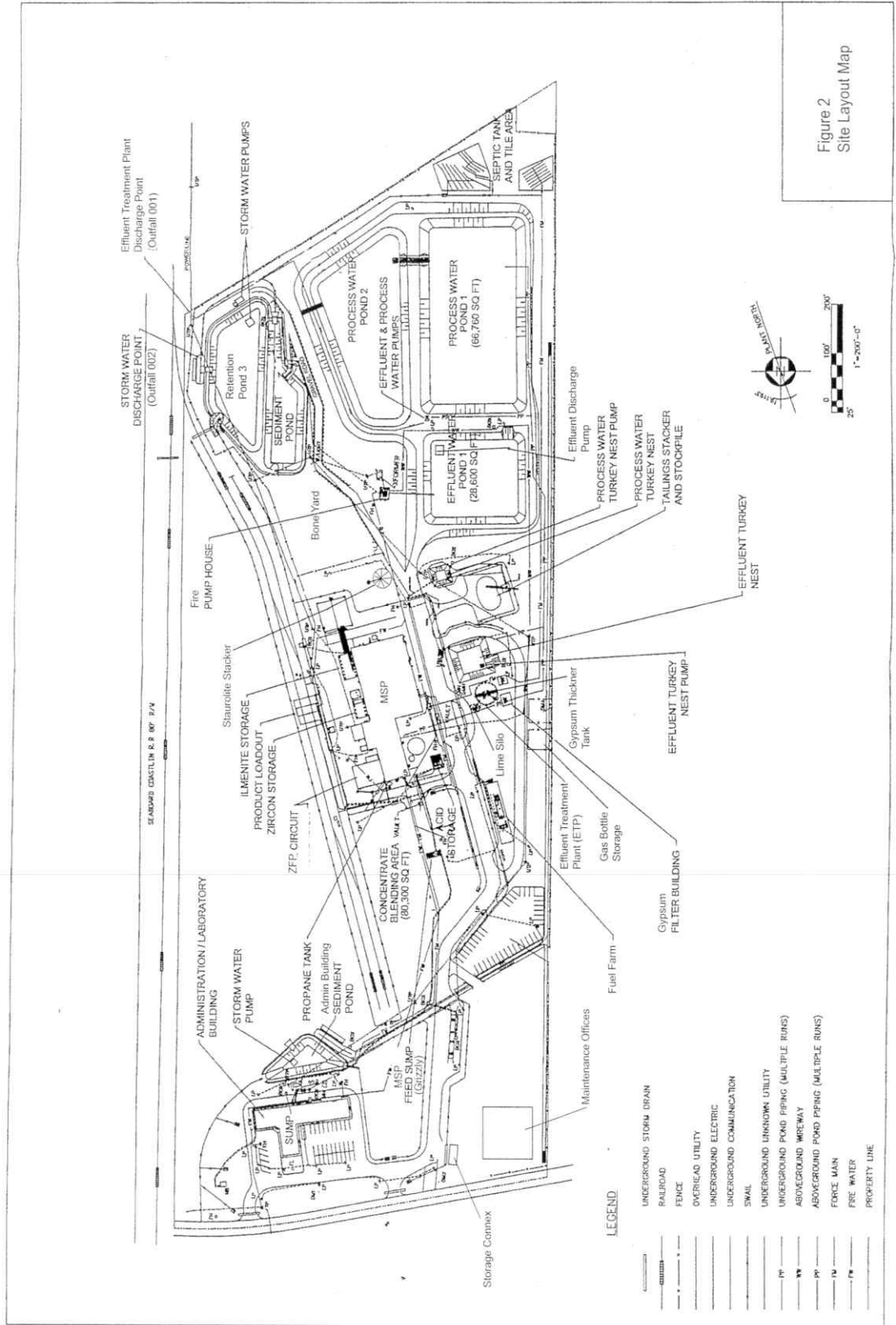
APPENDIX 1

MAPS AND FIGURES

Figure 1

Location Map
Iluka Resources Inc.
Mineral Separation Plant
12468 St. John Church Road
Stony Creek, VA 23882





	Total	Tailings
100%	98%	2%



MAIN PROCESS FLOW AND HITI (RUTILE)

ILMENITE
ZIRCON - MAIN PROCESS FLOW

[illegible]

Figure 4.
Zircon Finishing Plant
Process Flow Diagram

APPENDIX 2

DOCUMENTS

DOCUMENT 1

DOCUMENT 1: **PROCESS OVERVIEW AND WASTEWATER TREATMENT DESCRIPTION**

1.0 OVERVIEW OF OPERATIONS AND WASTEWATER SOURCES

Iluka Resources' 36.6 acre Processing site located in Sussex County, near Stony Creek (see Appendix 1, Figure 1) includes the Mineral Separation Plant (MSP), Administrative/Laboratory Building, and storm water management system (see Appendix 1, Figure 2). Major operations involved in the processing of mineral sands are conducted in and around the MSP and include the following:

- Mineral Sand Concentrate Storage and Plant Feed
- Drying of Concentrate Feed
- Ilmenite and HiTi Circuit
- Zircon Recovery Circuit
- Zircon Finishing Plant Circuit
- Staurolite Removal Circuit
- Zircon Finishing Plant Effluent Treatment Plant (ETP)
- Tailings Removal

A process flow diagram that shows the major steps in the production of titanium-bearing and zircon mineral sand concentrate from the mine site to the production of finished products at the MSP is included in Appendix 1, Figure 3. The MSP typically operates continuously, 24 hours a day, seven days a week.

1.1 Mineral Sand Concentrate Storage and Plant Feed

At the mine and Mine Concentrator sites, mineral sands ore is excavated from relic beach ridge deposits by track-hoe excavators, slurried, and concentrated using various wet gravity separation processes. Approximately 10 percent by weight of the ore body is removed from the excavated material as mineral sand concentrate and the remaining 90 percent clay and sand tailings are returned to the tailings pit in the mine area, graded and reclaimed in accordance with all necessary permits. The mineral sand concentrate is pumped from the Mine Concentrator building to a concentrate stacker where excess water is removed and returned to the Mine Concentrator process water pond. The raw

mineral sand concentrate, which consists of approximately 90 percent mineral sands, is then hauled by truck approximately 14 miles to the MSP for final separation into the ilmenite and zircon mineral sands products. After weigh-in on the scales at the entrance to the MSP, the trucks dump the raw concentrate in an approximately 1.85-acre storage stockpile area located immediately north of the MSP. Raw concentrate is removed from the stockpile area and fed into the MSP's grizzly feed sump (see Appendix 1, Figure 2 for location) by the site's Volvo front end loader.

1.2 Drying of Concentrate Feed

Drying is required to reduce moisture content to less than 0.1 percent by weight prior to electrostatic and electromagnetic processing for separation of titanium bearing-minerals (ilmenite, rutile and leucoxene) from zircon and non-conducting gangue minerals. The mineral sand concentrate loaded into the outside grizzly feed sump is slurried with clean water from the Process Water Pond, screened, and pumped into the 1,600-ton new feed day tank. Mineral slurry from the day tank is pumped to the scrubber rinse circuit and then to the filter feed cyclones to remove excess water prior to additional dewatering on a belt filter. The belt reduces the moisture content of the feed to approximately 5 percent by weight. The filtrate liquid is pumped to the process water system for reuse. The filter cake from the belt press is temporarily stored in a bin and then screw fed into a fluid-bed dryer to reduce moisture content to less than 0.1 percent by weight.

1.3 Ilmenite and HiTi Circuit

After the concentrate is sufficiently dried, the material is screened to remove oversize material, which is sent to the tailings stockpile. The underflow from the screen is fed into high-tension electrostatic (HT) separators, which separate the electrically conductive ilmenite and rutile from the non-conductive zircon and gangue minerals. The conductive minerals are screened and the oversize material is slurried and pumped to the tailings stockpile. The material passing through the screen is sent through a series of magnets to separate the more magnetic titanium-bearing mineral ilmenite from the less magnetic titanium-bearing minerals (rutile and leucoxene) commonly referred to as HiTi. The

magnetic titanium-bearing minerals collected from each magnet is combined and conveyed to the ilmenite product storage bin prior to shipment. The less magnetic HiTi minerals pass through a series of electrostatic plate separators to remove any residual non-conductive material before being combined with the ilmenite product stream prior to storage in the ilmenite product storage bin. Various properties of the minerals processed at the MSP can be found in Table 1.

Table 1: Properties of Minerals

	Ilmenite	Rutile	Leucoxene	Zircon
Chemical Formula	FeTiO ₃ ,	TiO ₂	TiO ₂ + FeTiO ₃	ZrSiO ₄
Specific Gravity	4.75	4.22	3.95	4.69
Magnetic Properties	Conductor Magnetic	Conductor Non- Magnetic	Conductor Weakly Magnetic	Non-Conductor Non-Magnetic

1.4 Zircon Recovery and Finishing Plant Circuits

Because of strict customer quality control requirements regarding contaminants in the final zircon product, Iluka uses only clean water from Process Water Pond 2 for the final rinsing step in Rinsing Hydrosizer No. 2. Treated effluent water from the ETP is used in all other rinsing steps in the Zircon Finishing Plant (ZFP). The overflow from Rinsing Hydrosizer No. 2 empties into the Rinsing Sump. The cleaned zircon concentrate underflow is discharged into a sump and then pumped into a final dewatering cyclone. The dewatered zircon concentrate is conveyed to a vacuum filter belt for additional dewatering and then to the zircon fluid bed dryer for removal of any remaining moisture. A process flow diagram for the ZFP is included in Appendix 1 as Figure 4.

The dried zircon concentrate is screened to remove oversized material and fed into a secondary three-stage HT separator to remove any residual conductive material. This conductive material is returned to the primary HT circuit to recover any titanium-bearing minerals. The non-conductive material is passed through a high-intensity magnetic separator circuit to remove any residual magnetic material. The magnetic material is sent to the tailings stockpile while the non-magnetic material (primarily zircon) is screened and conveyed to the zircon product storage bins for shipment.

1.5 Staurolite Removal Circuit

The Staurolite Removal Circuit is contained within the MSP. The non-conductor stream from the Ilmenite and HiTi Circuit is combined with the non-conductor product from the initial electrostatic separation process to form the feed for the Staurolite Removal Circuit. An elevator and conveyor move the feed to a set of rare earth roll magnetic separators (RERMS), which produce separate mag1, mag2 and non-mag material streams. The top roll, with its lower magnetic rating, recovers highly magnetic material (mag1); primarily misplaced ilmenite. The mag1 material is directed to the base of the elevator that feeds the conductor screens. The second and third rolls recover paramagnetic material (mag2) that is passed through an electrostatic separator to scavenge any misplaced conductor material. The paramagnetic conductor stream is sent to the conductor screen elevator along with the mag1 product. The paramagnetic non-conducting staurolite-containing material (non-mag) is presently sent to the conductor oversize sump and from there to the staurolite stacker for disposal as tailings. However, the staurolite-containing material is available for packaging should a market for it be discovered. The non-magnetic stream from the RERMS can be directed to a surge bin for storage or as feed to the Zircon Recovery Circuit.

1.6 Tailings

Tailings are slurried and pumped to the tailings stacker located immediately west of the MSP (see Appendix 1, Figure 2 for location). Excess water from the tailings stacker drains into the Tailings Turkey Nest. An electric-powered pump then transfers water from the Tailings Turkey Nest to the Process Water Pond for reuse. The stacked tailings are loaded into dump trucks and hauled back to the mine sites where they are backfilled into the mine pits and graded for reclamation.

2.0 ZIRCON FINISHING PLANT WATER QUALITY

2.1 Effluent Water Quality

The mineral sand concentrate processed at the MSP includes the titanium-bearing minerals ilmenite, rutile, and leucoxene, in addition to zircon and miscellaneous gangue minerals. By taking advantage of their differing physical properties (see Table 1), these minerals are separated from each other using non-chemical techniques including various wet gravity methods, high-tension electrostatic separation, and magnetic separation.

The titanium-bearing minerals are separated from the zircon prior to the zircon finishing circuit using high-tension electrostatic separators as described in Section 2.3.

Therefore, very little titanium-bearing material is expected to be present during this step.

2.1.1 Analytical Testing

Lab reports resulting from analytical testing of the effluent stream are included in this renewal application in Appendix 3, as Items 1, 2 and 3.

3.0 ZIRCON EFFLUENT WATER TREATMENT PLANT

The Effluent Treatment Plant (ETP) system incorporates the following general processes to reduce the sulfate, iron, and trace metals expected in the influent stream.

- Neutralization and precipitation
- Clarification and sludge thickening
- ZFP treated process water storage, reuse, and discharge
- Gypsum sludge dewatering and disposal

The ETP utilizes hydrated lime as the neutralizing and precipitating agent. The system is based on EIMCO Process Equipment Company's (EIMCO) precipitant stabilization solid recycle (PSSR) system. The process water treatment plant is located on concrete

pads to the west of the MSP (see Appendix 1, Figure 2). Drains in the concrete pads allow for spills and precipitation to gravity flow to the concrete Neutralization Area Sump located underneath the Gypsum Thickener where the recovered water is pumped back into the treatment system. A process flow diagram for the ETP can be found in Appendix 1, Figure 5.

3.1 Lime Storage, Slurry Generation, and Neutralization

Lime storage, lime slurry mixing, and neutralization is performed in a portion of the ETP enclosed in a steel silo located west of the MSP on a concrete pad. Hydrated lime powder is hauled in bulk tanker trucks to the ETP where a pneumatic transfer system is used to convey the hydrated lime powder from the tanker truck to the Lime Storage Bin, situated in the upper portion of the silo. This storage bin is equipped with air pollution control devices to capture fugitive lime dust generated during transfer operations.

The Lime Slurry Tank, located underneath the Lime Storage Bin, is constructed of high carbon steel with a nominal capacity of 477 gallons and a working capacity of 371 gallons. The contents of the Lime Slurry Tank are continuously mixed with a stainless steel agitator. A Programmable Logic Control (PLC) operated variable frequency drive controls the lime screw feeder from the Lime Storage Bin, thus allowing for control of the lime slurry concentration. The lime slurry overflows into the Gypsum Mixing Tank, which is located adjacent to the Lime Silo.

The Gypsum Mixing Tank is made of high carbon steel with a nominal capacity of 420 gallons and a working capacity of 397 gallons. In this tank, lime slurry from the Lime Slurry Tank is seeded with approximately 97 gallons per minute of recycled gypsum underflow from the Gypsum Thickener while being continuously mixed with a stainless steel agitator. The contents of the Gypsum Mixing Tank then overflow into the Neutralization Tank.

The Neutralization Tank is located in the Lime Silo underneath the Lime Slurry Tank. It is constructed of high carbon steel with a nominal capacity of 6,770 gallons and a

working capacity of 5,500 gallons. The Rinsing Overflow Sump Pump in the ZFP transfers approximately 285 gallons per minute of acidic wastewater to the Neutralization Tank where it is neutralized by chemical reactions with the lime and gypsum slurry from the Gypsum Mixing Tank. The contents of the Neutralization Tank are continuously mixed with a stainless steel agitator, promoting the neutralization reactions. Retention time in the Neutralization Tank is approximately 15 minutes. The neutralized effluent water and suspended solids are then pumped from the Neutralization Tank to the Gypsum Thickener using a variable frequency drive, centrifugal pump rated for 400 gallons per minute. An ultrasonic level indicator mounted on the Neutralization Tank controls the pump speed and triggers a low-level alarm when the liquid level in the tank falls to 2.5 feet above the tank bottom and a high-level alarm at 7.0 feet above the tank bottom. The PLC receives the alarm information and sends a signal to the ETP's Motor Control Center (MCC) and the pump speed is adjusted accordingly. A pH indicator/controller continuously monitors the pH of the treated effluent leaving the Neutralization Tank and relays the data to the ETP's PLC where the pH data is compared to the pH setpoint. The setpoint is adjusted to maintain the effluent pH between 6 and 9 standard units. When the pH of the effluent falls below the setpoint the PLC signals the ETP's MCC to activate the Lime Storage Bin vibrator, the lime screw feeder, and plant water supply valve to mix additional lime slurry to be fed into the Neutralization Tank.

3.2 Clarification and Sludge Thickening

The Gypsum Thickener is made of high carbon steel with a nominal capacity of 142,750 gallons, a working capacity of 136,800 gallons, and detention time of approximately 5.7 hours. It is set above grade and is supported by steel piers on a concrete pad.

Neutralized effluent water enters the tank through the Thickener's center well, where the water and suspended solids are discharged in a downward direction below the liquid level in the tank. Velocity of the flow decreases after leaving the center well, allowing suspended solids to settle. Clarified, treated water flows upward and outward from the center well to peripheral weirs along the outside tank wall where it then flows into a collection launder. Heavier suspended solids entering the thickener are the first to settle

and accumulate on the floor of the thickener. Less dense suspended solids may be carried upward for a short distance with the water until the velocity of the flow falls below the settling velocity of the particles. The sludge blanket that forms at this equilibrium point acts as a filter, trapping smaller, less dense particles. Eventually, these particles agglomerate and slowly fall, to be removed with the denser gypsum sludge. A set of motorized rakes slowly rotates on the floor of the Thickener, moving the settled sludge downward along the sloped tank bottom and into the sludge well. The 30 percent solids in the sludge well are then pumped by one of two Thickener Underflow Pumps rated for 100 gallons per minute. One pump is installed as a spare while the other pump continuously recycles approximately 97 gallons per minute of 30 percent solids to the Gypsum Mixing Tank. Approximately 3 gallons per minute of 30 percent solids are fed into the Vacuum Drum Filter for gypsum sludge dewatering and removal.

3.3 Treated Water Storage and Disposal

The treated effluent water from the Gypsum Thickener is piped from the collection launder to the Effluent Turkey Nest for temporary storage. This 10-foot deep pond is constructed to hold approximately 230,000 gallons of treated effluent water with a minimum freeboard of 2 feet. The Turkey Nest is lined with an 80-mil thick high-density polyethylene (HDPE) liner to prevent the release of treated process water to the underlying soil and groundwater. A typical cross-section of the Effluent Turkey Nest is provided in Appendix 1, Figure 6.

The Effluent Pond receives neutralized process water from the Effluent Turkey Nest and serves as a storage vessel prior to reuse and/or discharge. The 10-foot deep pond is constructed to hold approximately 2,250,000 gallons of treated process water with a minimum freeboard of 2 feet. The Effluent Pond is lined with an 80-mil thick high density polyethylene (HDPE) liner to prevent the release of treated process water to the underlying soil and groundwater. A typical cross-section of the Effluent Pond is provided in Appendix 1, Figure 5. One pump at the Effluent Pond is used to reclaim treated water for reuse in the ZFP. Another pump is used to discharge treated effluent water through an HDPE discharge line (Outfall 001) to the same ditch that conveys storm water from the concrete level spreader installed within the bank of the Storm Water Pond (Outfall

002). The location of the discharge line and point are shown on Figure 2, Site Layout Map located in Appendix 1. The effluent discharge pump is rated for a maximum discharge of 140 gallons per minute. However, the average daily discharge rate is 29.4 gallons per minute. The maximum 24 hour discharge rate allowed by our permit is 41.6 gallons per minute.

3.4 Sludge Dewatering

Approximately 3 gallons per minute of 30 percent solids from the Gypsum Thickener are bled from the Thickener Underflow Pump discharge into to the Vacuum Drum Filter. The 3-foot diameter by 3-foot long rotary drum filter dewateres the sludge to a minimum of 65 percent solids by weight. Filtrate is collected in a 100-gallon capacity Vacuum Receiver and pumped backed to the thickener center well. The gypsum filter cake is conveyed to a 160 square foot rectangular Storage Pad with 6-foot high concrete walls on three sides. A sump drain is used to carry any excess water or precipitation from the Storage Pad to the concrete Neutralization Area Sump located underneath the Gypsum Thickener. The dewatered gypsum cake is then hauled to mine site to be interred as part of Iluka's reclaim efforts.

DOCUMENT 2

Document 2: **NARRATIVE DESCRIPTION OF THE SITE**

Iluka Resources' Processing site is situated on 36.6 acres in Sussex County near the town of Stony Creek (see Appendix 1, Figure 1).

Storm water drainage for 11.85 acres of the site, including the MSP building and associated facilities, is provided by Outfall 002 (see Appendix 1, Figure 2).

1.0 Significant Materials

Significant materials used, proposed for use, or manufactured in the drainage area served by Outfall 002 include the following items:

- Raw mineral sand concentrate feed
- Off-road diesel fuel
- Dryer fuel oil
- Sulfuric acid
- The Effluent Treatment Plant (ETP)
 - Hydrated lime
 - Gypsum
- Kerosene
- Finished mineral sand products
- Tailings
- Small quantities of chemicals, lubricants and hydraulic oils

Each of these materials, except for the raw mineral sand concentrate feed, gypsum, and tailings are stored in enclosed containers or buildings, which prevent the contact of storm water with the material. Please refer to Appendix 1, Figure 2 for the locations of all items listed.

2.0 Methods of Treatment, Storage, and Disposal

2.1 Raw Mineral Sand Concentrate Feed

The mineral sand concentrate, which consists of approximately 90 percent mineral sands, is hauled by truck approximately 14 miles to the Mineral Separation Plant (MSP) for final separation and production of mineral sands products. After weigh-in on the scales located near the entrance to the site, the trucks dump the raw concentrate in an approximately 1.85-acre storage stockpile area located immediately north of the MSP.

Concentrate is removed from the stockpile and fed into the MSP's grizzly feed sump by the site's Volvo front end loader. The pollutant of concern associated with concentrate storage and plant feed is the concentrate material itself. The mineral sands in the stockpiles are naturally occurring and inert. None of the RCRA metals were observed in the results of Toxicity Characteristic Leaching Procedure (TCLP) testing that was performed on mineral sand concentrate and finished product material in 2000. The results of this testing can be found in Appendix 3, Item 3. Additional analytical results of samples taken from outfall 002 and required for the renewal of this permit are included in Appendix 3 as Item 4.

As seen in Table 1, the minerals have relatively high specific gravities ranging from 3.95 (leucoxene) to 4.75 (ilmenite). Therefore, it is unlikely that concentrate would be transported by surface water sheet flow resulting from small storm events. Storm water from the concentrate stockpile areas sheet flows until it intersects one of three unlined drainage channels that are located around the east, west, and south perimeter of the stockpile area. The drainage channels convey the storm water south to Retention Pond 3. In the event of a large storm event, minor amounts of concentrate could become available for transport to Retention Pond 3. If concentrate reaches the pond, it will settle out and Iluka will reclaim the valuable concentrate from the drainage channels and/or pond. Transport of mineral sands through outfall 002 from the Storm Water pond is highly unlikely.

Table 1: Properties of Minerals

Property	Ilmenite	Rutile	Leucoxene	Zircon
Chemical Formula	FeTiO_3	TiO_2	$\text{TiO}_2 + \text{FeTiO}_3$	ZrSiO_4
Specific Gravity	4.75	4.22	3.95	4.69
Magnetic Properties	Conductor Magnetic	Conductor Non-Magnetic	Conductor Weakly Magnetic	Non-Conductor Non-Magnetic

2.2 Off-Road Diesel Fuel

Iluka contracts dump trucks owned and operated by a third party to transport mineral sand concentrate to the MSP and tailings back to the mine site. These trucks are fueled and maintained off-site by the contractor. A 2,000-gallon above-ground storage tank (AST) that is located in the Tank Farm northwest of the MSP is used to store off-road fuel for Iluka's diesel powered equipment that includes the front-end loader used to load concentrate into the grizzly feed sump and the transfer pump located at the Storm Water pond. The 2,000-gallon AST is equipped with welded steel secondary containment and a rain shield.

2.3 Dryer Fuel Oil

The primary pollutant of concern associated with feed drying activities is the dryer fuel (#2 fuel oil, #6 fuel oil, or on-specification used oil). Used oil for the primary dryer is obtained from off-site suppliers and meets Virginia Department of Environmental Quality's (VDEQ's) criteria for "on-spec" used oil as well as requirements set forth in the site's VDEQ Stationary Source Permit, Registration # 51220. Dryer fuel is stored in a 20,000-gallon AST that is located in the Tank Farm northwest of the MSP. The AST is equipped with welded steel secondary containment and a rain shield.

2.4 Kerosene

Kerosene is burned in torpedo heaters which are used during the winter months to regulate the temperature of the plant. The kerosene is currently stored in one 200-gallon AST located to the south of the MSP. However, the tank is to be relocated to the Tank Farm northwest of the MSP in the near future.

2.5 Sulfuric Acid

Sulfuric acid used in the Zircon Finishing Plant (ZFP, formerly Zircon Acid Leaching Circuit) is stored in a 5,000-gallon high density linear polyethylene (HDLPE) AST with concrete secondary containment located at the northwest corner of the MSP building.

2.6 Effluent Treatment Plant

Acidic process water from the ZFP is neutralized in the Effluent Treatment Plant (ETP). The ETP consists of an enclosed steel silo which houses the Lime Storage Bin, the Lime Slurry Tank, and the Neutralization Tank; a Gypsum Mixing Tank; a Gypsum Thickener/Clarifier; a Filter Building; and a Filter Cake Storage Pad. Hydrated lime is loaded directly into the storage bin using a pneumatic conveyance system. All of the treatment plant equipment is built on concrete pads with provisions for drainage of washdown water, spills or leaks, and/or precipitation into a concrete Neutralization Area Sump located underneath the Gypsum Thickener. A sump pump conveys the collected water into the center well of the Gypsum Thickener and back into the treatment system. In the event of a pump or tank failure the water would likely be contained within the Neutralization Area Sump. If water escaped the ETP area it would flow east towards a ditch which drains into Retention Pond 3. A temporary berm could be constructed across the ditch by the on-site front-end loader to capture any release. Any sludge or precipitates contained in the process water would likely settle out before the catch basin due to their high specific gravities. All process water would be retained and pumped backed to the ETP.

The Effluent Turkey Nest stores neutralized effluent water from the ETP. The pond may also be used to temporarily store acidic effluent water in the event of a release inside the MSP. Any acidic water would be pumped to the ETP and neutralized. The 10-foot deep Effluent Turkey Nest is constructed with 1.5:1 horizontal to vertical (H:V) inside side slopes and bottom dimensions of 50-feet by 50-feet. The permitted minimum freeboard is 2 feet leaving 8 feet for storage of approximately 230,000 gallons of effluent water. The turkey nest is lined with an 80-mil thick high-density polyethylene (HDPE) liner to prevent the release of process water to the underlying soil and groundwater. The turkey nest is constructed in-ground; therefore, direct release to surface water is unlikely.

The Effluent Pond receives and stores neutralized effluent water from the Turkey Nest prior to reuse and/or discharge through outfall 001. The 10-foot deep pond is constructed with 4-foot high engineered berms with 2:1 (H:V) outside side slopes, 1.5:1 (H:V) inside slopes and bottom dimensions of 160-feet by 180 feet. The permitted minimum freeboard is 2 feet leaving 8 feet for storage of approximately 2,250,000 gallons of treated effluent water. The Effluent Pond is lined with an 80-mil thick HDPE liner to prevent the release of process water to the underlying soil and groundwater. Since 4 feet of the pond is constructed above ground, a direct release to surface water is possible in the event of a berm failure. Although the minimum freeboard is 2 feet, the normal operating freeboard is 3 feet to allow for storage capacity in the event of a release within the MSP and to limit the potential for berm failure. In the unlikely event of a berm failure, approximately 1 foot or roughly 275,000 gallons of water could be released from the pond, but would drain into Sediment Basin 2. A diesel transfer pump adjacent to the basin would be used to return the water to the ETP or Process Water Pond.

2.7 Finished Mineral Sand Products

After mineral separation and concentration occurs and impurities are removed, the ilmenite and zircon products are temporarily stored in covered metal bins located on the east side of the MSP Building. Product is loaded into the bins by elevators.

Programmed logic controller (PLC) equipped loadout conveyors transfer the products to bulk railcars provided by CSX Railway. A weigh scale interlocked to a totalizer and the conveyor PLC unit stops the conveyor and closes the bin gate to the railcar when 100 tons has been transferred. Because the storage bins are covered, storm water does not to interact with the stored finished product.

2.8 Tailings

Tailings are slurried and pumped to the Tails Stacker located west of the MSP. The tailings generally consist of quartz, staurolite and other minor sand-sized gangue minerals. These naturally occurring, inert materials do not pose a risk as pollutants to surface water. However, process and storm water drainage from the tailings is collected

and routed to the Tailings Turkey Nest where solids are settled out before pumping the water to Process Water Pond 1 for reuse. If initial zircon recoveries are not considered optimal, tailings may be reprocessed at the Mine Site Concentrator. To improve secondary zircon recovery from the tails, staurolite can be diverted from the Tails Stackers to the Staurolite Stackers located to the south of the MSP. Water from the stacker cyclone is directed to the Tailings Turkey Nest. Any additional drainage from the stacked staurolite flows to Retention Pond 3, where it is moved via the adjacent diesel transfer pump to Process Water Pond 2 for reuse. The stacked tailings are loaded into dump trucks and hauled back to the mine where they are backfilled into the mine pits and graded for reclamation.

2.9 Small Quantities of Chemicals, Lubricants, and Hydraulic Oils

Minor amounts of various chemicals used in equipment maintenance and cleaning are stored in three primary locations within the MSP Building. Chemical storage in these enclosed areas does not pose a threat of release due to the minor quantities of materials stored. With the exception of the Volvo front end loader, all chemicals are used on equipment located within the MSP Building and the materials do not come into contact with storm water. A used and waste oil containment area is located on the paved area along the exterior wall of the MSP. Used and waste oil are stored in a sealed 200 gallon plastic collection drum. Used hydraulic oil, small amounts of waste oil, soiled absorbent pads and booms are stored in sealed 50 gallon metal drums or sealed 5 gallon plastic buckets. Storm water does currently come into contact with the collection vessels, however, as previously noted, these containers are sealed, and therefore storm water does not come into contact with the materials contained within. This area is inspected regularly by MSP and EHS personnel. Collection of the materials by either Safety-Kleen Systems or Siemens Water Technologies is scheduled as needed. In the unlikely event that one or more of the collection vessels is compromised, immediate efforts will be made to contain and recover the material on the paved surface. If initial containment efforts fail, the material would flow into the drainage ditch feeding into Retention Pond 3. Absorbent pads and booms would be deployed to arrest

the flow in the ditch. If any of the oil managed to make it to Retention Pond 3, absorbent pads and booms would be used to collect it. Any contaminated absorbent materials, water and/or soil resulting from such an event would be collected, treated and disposed of properly. Plans are currently underway to construct a metal shed which will shield this area from storm water.

3.0 Past and Present Management Practices

Iluka has prepared a combined Storm Water Pollution Prevention and SPCC Plan to document procedures used to minimize the contact of materials with storm water runoff. This document is currently being updated. A copy of the SWPP/SPCC Plan is available for inspection in the Environmental, Health and Safety Office at the Administrative/Laboratory Building. As mentioned in the above section, chemicals are primarily stored in enclosed buildings or ASTs equipped with secondary containment. When this is not possible, the chemicals are stored in sealed containers and placed on paved surfaces in designated areas.

4.0 Pesticide and Herbicide Use

Herbicides are not generally used at the site. A monthly service is used to control insects and rodents in the MSP and Administrative/Laboratory Building. A copy of the pest control agreement and MSDS sheets for the chemicals used on-site are included in Appendix 2 as Document 3.

DOCUMENT 3

PRODUCT 129

PRINTED IN U.S.A. H

Pest Control Service Agreement

HOUCHINS PEST CONTROL, INC.

2775 County Drive
PETERSBURG, VA 23803
(804) 732-2930 Fax (804) 732-6842

1077

CUSTOMER Iluka Resources, Inc.		SERVICE LOCATION	
STREET 12472 St. Johns Church Road		PERSON TO BE CONTACTED	
CITY, STATE and ZIP Stony Creek, VA 23882		SERVICE PHONE	
PHONE 434-246-8016	TYPE OF PROPERTY TO BE SERVED		
DATE SERVICE BEGINS	EXPIRATION DATE	RENEWAL <input type="checkbox"/> <input checked="" type="checkbox"/>	SERVICE TO BE PERFORMED <input checked="" type="checkbox"/> MONTHLY <input type="checkbox"/> QUARTERLY <input type="checkbox"/> OTHER
PESTS TO BE CONTROLLED Roaches, ants, spiders and rodents			
SPECIAL INSTRUCTIONS Treat hallways, restrooms, breakrooms and offices; spray outside perimeter of blue building and both trailers. Use bait and glueboards for control of rodents. Termites and clovermites are not included in this contract.			
TERMS AND CONDITIONS			
<p>SERVICE GUARANTEE: We agree to apply chemicals to control above-named pests in accordance with terms and conditions of this Service Agreement. All labor and materials will be furnished to provide the most efficient pest control and maximum safety required by federal, state and city regulations.</p> <p>SERVICE RENEWAL: This agreement shall be for an initial period of one year, and will renew itself annually unless either party cancels this agreement by giving thirty days written notice before any expiration date.</p>			
ANNUAL AGREEMENT CHARGE	\$	BY COMPANY	DATE 10/2/06
INITIAL SERVICE CHARGE	\$	(AUTHORIZED SIGNATURE)	
MONTHLY/QUARTERLY PAYMENTS	\$ 150.00	FOR CUSTOMER	DATE
	\$	(AUTHORIZED SIGNATURE)	



Bayer CropScience

MATERIAL SAFETY DATA SHEET

BAYER CROP SCIENCE

P.O. Box 4913 Hawthorn Road
Kansas City, MO 64120-0013

TRANSPORTATION EMERGENCY

CALL CHEMTREC: 800-424-9300
INTERNATIONAL: 703-527-3887

NON-TRANSPORTATION

BAYER EMERGENCY PHONE...: (800) 414-0244
BAYER INFORMATION PHONE.: (800) 842-8020

1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME.....: TEMPO SC Ultra Premise Spray
PRODUCT CODE.....: 21648
CHEMICAL FAMILY.....: Pyrethroid Insecticide
CHEMICAL NAME.....: Cyano(4-fluoro-3-phenoxyphenyl)methyl 3-(2,2
-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate
SYNONYMS.....: beta-cyfluthrin
FORMULA.....: C22 H18 Cl2 F N O3

2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME /CAS NUMBER	EXPOSURE LIMITS	CONCENTRATION (%)
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***** HAZARDOUS INGREDIENTS *****

FCR 4545 Technical (beta-cyfluthrin)

68359-37-5 OSHA : Not Established

11.8 %

ACGIH: Not Established

Specific chemical identity is withheld as a trade secret.

OSHA : Not Established

1-3 %

ACGIH: Not Established

Product Code: 21648
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Continued on next page

3. HAZARDS IDENTIFICATION:

 * EMERGENCY OVERVIEW *
 *
 * CAUTION! Color: Beige; Form: Liquid; Off-white to beige *
 * viscous liquid suspension; Odor: Chalky; Harmful if *
 * inhaled; Harmful if absorbed through skin; Causes eye *
 * irritation. *

POTENTIAL HEALTH EFFECTS:

ROUTE(S) OF ENTRY.....: Inhalation; Skin Contact; Skin Absorption;
 Eye Contact

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE EFFECTS OF EXPOSURE.....: Skin and mucous membrane irritation may occur from contact with the product and produce symptoms such as itching, stinging, skin reddening or rash. Paresthesia (a tingling or burning sensation on the surface of the skin) may also result from skin contact. These are frequently reported symptoms associated with sufficient dermal exposure to alpha-cyano (Type II) synthetic pyrethroids and normally subside without treatment within 24 hours. The onset of these symptoms usually occurs 2-12 hours after exposure. The effects are temporary and are reversible. Based on the EPA Toxicity Category criteria, this material is mildly toxic by the oral and dermal routes of exposure. In addition, animal studies have shown that it can cause mild irritation to the conjunctiva of the eye with all irritation resolving within 7 days.

CHRONIC EFFECTS OF EXPOSURE....: Based on animal studies, no adverse effects or symptoms would be expected from chronic exposure to this material.

CARCINOGENICITY.....: This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.

MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE.....: No specific medical conditions are known which may be aggravated by exposure to this product. As with all materials which can cause upper respiratory tract irritation, persons with a history of asthma, emphysema, or hyperreactive airways disease may be more susceptible to overexposure.

4. FIRST AID MEASURES:

FIRST AID FOR EYES.....: Hold eyelids open and flush with copious amounts of water for 15 minutes. Call a physician if irritation develops or persists

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4. FIRST AID MEASURES (Continued)

after flushing.

FIRST AID FOR SKIN.....: Remove contaminated clothing immediately. Wash skin with soap and water, preferably preceded by a waterless hand cleaner. Get medical attention if irritation develops or persists. If signs of intoxication (poisoning) occur, get medical attention immediately.

FIRST AID FOR INHALATION: If a person is overcome by excessive exposures to aerosols or vapors of this material, remove to fresh air or uncontaminated area. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention as soon as possible.

FIRST AID FOR INGESTION.: If ingestion is suspected, call a physician or poison control center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger, or, if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once. Do not induce vomiting or give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN.....: ANTIDOTE: No specific antidote is available. Treat victim symptomatically. Published data indicate vitamin E acetate can prevent and/or mitigate symptoms of paresthesia caused by synthetic pyrethroids. In case of poisoning, it is also requested that Bayer Corp., Agriculture Division, Kansas City, Missouri, be notified. Telephone: 1-800-414-0244

5. FIRE FIGHTING MEASURES:

FLASH POINT.....: Greater than 200 F (93 C)

EXTINGUISHING MEDIA.....: Water; Foam; Dry Chemical

SPECIAL FIRE FIGHTING PROCEDURES: Keep out of smoke. Cool exposed containers with water spray. Fight fire from upwind position. Use self-contained breathing equipment. Contain runoff to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

6. ACCIDENTAL RELEASE MEASURES:

SPILL OR LEAK PROCEDURES.....: Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing vapors and skin contact. Remove sources of ignition if combustible or flammable vapors may be present and ventilate area. Wear proper protective equipment. Dike contaminated area with absorbent granules, soil, sand, etc. If large spill, material should be recovered. Small spills can be absorbed with absorbent granules, spill control pads, or any absorbent material. Carefully sweep up absorbed spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and water. Use dry absorbent materials such as clay granules to absorb and

6. ACCIDENTAL RELEASE MEASURES (Continued)

collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways or contact vegetation.

7. HANDLING AND STORAGE:

STORAGE TEMPERATURE(MIN/MAX): 0 F/30 day avg. not to exceed 100 F
SHELF LIFE.....: Time/temperature-dependent. Contact Bayer for specific information.
SPECIAL SENSITIVITY.....: Not established
HANDLING/STORAGE PRECAUTIONS: Store in a cool, dry area designated specifically for pesticides.

8. PERSONAL PROTECTION:

EYE PROTECTION REQUIREMENTS.....: Goggles should be used to prevent liquid from getting into eyes.
SKIN PROTECTION REQUIREMENTS.....: Avoid skin contact. Wear long sleeves and trousers.
HAND PROTECTION REQUIREMENTS.....: Chemical-resistant gloves such as neoprene
VENTILATION REQUIREMENTS.....: Control exposure levels through the use of general and local exhaust ventilation.
RESPIRATOR REQUIREMENTS.....: When respiratory protection is necessary under the conditions of use, wear a NIOSH-approved organic vapor respirator with dust and mist filter.
ADDITIONAL PROTECTIVE MEASURES.....: Clean water and soap should be available for washing in case of eye or skin contamination. Waterless hand cleaner use is often more effective than soap and water. Sensitive areas of the skin and mucous membranes can become contaminated indirectly. Educate and train employees in safe use of the product. Follow all label instructions. Launder clothing separately after use. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES:

PHYSICAL FORM.....: Liquid
APPEARANCE.....: Off-white to beige viscous liquid suspension
COLOR.....: Beige
ODOR.....: Chalky
MOLECULAR WEIGHT.....: 434.3 (for beta-cyfluthrin)
pH: 7-8
BOILING POINT.....: Not established
MELTING/FREEZING POINT....: Approx. 20 F

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9. PHYSICAL AND CHEMICAL PROPERTIES (Continued)

VISCOSITY.....: 1060 cps @ 23 C
 SOLUBILITY IN WATER.....: Not established
 SPECIFIC GRAVITY.....: 1.06 @ 20 C/20 C
 BULK DENSITY.....: Not established
 VAPOR PRESSURE.....: 7.2×10^{-9} mm Hg @ 20 C (for beta-cyfluthrin)

10. STABILITY AND REACTIVITY:

STABILITY.....: This is a stable material.
 HAZARDOUS POLYMERIZATION....: Will not occur.
 INCOMPATIBILITIES.....: Alkaline media; reacts with methanol; incompatible with many disinfectants.
 INSTABILITY CONDITIONS.....: Not established
 DECOMPOSITION PRODUCTS.....: Not established

11. TOXICOLOGICAL INFORMATION:

Only acute studies have been performed on this product as formulated. The non-acute information pertains to the active ingredient, cyfluthrin technical, and its enriched isomer mixture, BAY FCR 4545 technical.

ACUTE TOXICITY

ORAL LD50.....: Male rat: 960 mg/kg -- Female rat: 1150 mg/kg
 DERMAL LD50.....: Male and Female Rat: >2000 mg/kg
 INHALATION LC50.....: 4 hr exposure to Liquid Aerosol: Male and Female Rat: >1.72 mg/L (analytical) -- 1 hr exposure to Liquid Aerosol (extrapolated from 4 hr): Male and Female Rat: >6.88 mg/L (analytical)
 EYE EFFECTS.....: Rabbit: Mild irritation to the conjunctiva was observed with all irritation cleared within 7 days post-treatment.
 SKIN EFFECTS.....: Rabbit: Not a dermal irritant
 SENSITIZATION.....: Guinea pig: Not a dermal sensitizer
 SUBCHRONIC TOXICITY....: FCR 4545: In a 13 week dog study, FCR 4545 was administered at dietary concentrations of 10, 60 or 360 ppm. Effects included vomiting and diarrhea after feeding, decreased body weight gain, and motor disturbances in the hind limbs. The no-observed effect-level (NOEL) was 60 ppm. In a 13 week study using rats, FCR 4545 was administered at dietary concentrations of 30, 125 or 500 ppm. Effects included reduced body weight gains and feed consumption, uncoordinated gait, and skin injuries of the neck and head from excessive preening due to the local irritant effect of the test material. The NOEL was 125 ppm. In a 4 week inhalation study, rats were exposed to FCR 4545 at liquid aerosol concentrations of 0.2, 2.7 or 23.5 mg/m³. Effects observed included ungroomed fur, piloerection, hyper- and hypoactivity, reduced body weight gains, reduced organ weights (thymus and spleen), and hematological changes. The NOEL was 0.2 mg/m³ based on decreased body weight gains. CYFLUTHRIN: In a 3 week dermal toxicity study, cyfluthrin

11. TOXICOLOGICAL INFORMATION (Continued)

was administered to rats for 6 hours/day at dose levels of 100, 340 or 1000 mg/kg. Animals received a total of 17-18 applications in a period of 22-23 days. An additional control and high-dose group were treated and maintained for 14-15 days following treatment so as to ascertain the extent of recovery. Effects observed included reduced feed consumption, red nasal discharge, urine stains, and findings at the dose site (scabbing, crusty, discolored and raised zones). Histologically, epidermal and dermal alterations in treated skin were observed in animals of the mid- and high-dose groups. Similar, but slightly less severe microscopic alterations were also observed in the high-dose recovery group. The overall NOEL was 100 mg/kg. In a 13 week inhalation study, rats were exposed to cyfluthrin at aerosol concentrations of 0.09, 0.71 or 4.51 mg/m³ for 6 hours/day, 5 days/week. The NOEL was 0.09 mg/m³ based on reduced body weight gains.

CHRONIC TOXICITY.....: Cyfluthrin has been investigated in chronic feeding studies using two different strains of rats. In each study, cyfluthrin was administered for 2 years at dietary concentrations ranging from 50 to 450 ppm. Body weight gains were decreased at concentrations of 150 ppm and greater. Changes in clinical chemistries occurred at 450 ppm. In one of the studies, histopathology revealed a numerical increase in mammary gland adenocarcinomas at 450 ppm. This finding was not statistically significant when compared to the controls and is not considered to be compound-related. In each study, the overall NOEL was 50 ppm based on decreased body weight gains. In a 1 year feeding study, dogs were administered cyfluthrin at dietary concentrations of 50, 100, 360 or 650 ppm. Beginning on week 8, the high dose was reduced to 500 ppm for the remainder of the study due to severe clinical neurological symptoms. Body weights were decreased for animals of the high-dose. Neurological findings (gait abnormalities and postural reaction deficits) were observed at doses of 360 and greater. The NOEL was 100 ppm.

CARCINOGENICITY.....: Cyfluthrin was investigated for carcinogenicity in chronic studies using rats and mice at maximum levels of 450 and 800 ppm, respectively. There was no evidence of a carcinogenic potential observed in either species.

MUTAGENICITY.....: In vitro and in vivo mutagenicity studies have been conducted on BAY FCR 4545 technical, all of which are negative. Numerous in vitro and in vivo mutagenicity studies have been conducted on cyfluthrin, all of which are negative.

DEVELOPMENTAL TOXICITY: FCR 4545: In a developmental toxicity study, Bay FCR 4545 technical was administered orally to rats during gestation at doses of 3, 10 or 40 mg/kg. At the lethal and maternally toxic dose of 40 mg/kg, there was a decrease in fetal body weights and an increased incidence of skeletal findings. The NOELs for maternal and developmental toxicity were 3 and 10 mg/kg, respectively. **Cyfluthrin:** In developmental toxicity studies using rats, cyfluthrin was administered during gestation by oral gavage at doses ranging from 1 to 30 mg/kg. The overall NOEL from these studies for maternal toxicity was 3 mg/kg. No developmental effects were observed at any of the doses tested. In each study, the NOEL for developmental toxicity was equivalent to the highest dose tested. The NOELs for developmental toxicity for the initial study and the subsequent study were 30 and 10 mg/kg, respectively. Rabbits were administered cyfluthrin during gestation by oral gavage at doses ranging from 5 to 180 mg/kg. At maternally toxic levels, there was an increased incidence of post-implantation losses. The overall

11. TOXICOLOGICAL INFORMATION (Continued)

NOEL derived from these studies for both maternal and developmental toxicity was 20 mg/kg. In an inhalation study, rats were exposed during gestation to cyfluthrin at aerosol concentrations of 0.46, 2.55 or 11.9 mg/m³ for 6 hours/day. NOELs for maternal and developmental toxicity were less than 0.46 and 0.46 mg/m³, respectively.

REPRODUCTION.....: In a reproduction study, cyfluthrin was administered to rats for 3 generations at dietary concentrations of 50, 150 and 450 ppm. Reproductive effects observed at parentally toxic levels included reductions in viability, lactation, litter size, feed consumption, and pup birth weights and body weight gains. Coarse tremors were observed in some offspring at 450 ppm. The NOEL for both parental and reproductive effects was 50 ppm. In another reproduction study, cyfluthrin was administered to rats for 2 generations at dietary concentrations of 50, 125 or 400 ppm. Coarse tremors occurring in conjunction with parental toxicity were observed in the offspring in the mid- and high-dose groups. Based on this finding, the neonatal NOEL was 50 ppm. The NOELs for parental and reproductive toxicity were 50 and 400 ppm, respectively.

NEUROTOXICITY: Numerous neurotoxicity studies have been conducted on cyfluthrin. Oral gavage studies using hens have indicated that at extremely high dose levels (5000 mg/kg), minimal nerve damage occurs. When rats were administered cyfluthrin daily at oral doses of 40 to 80 mg/kg for 14 days, minimal nerve effects were seen. These effects were completely reversible within a 3 month recovery period. In dermal and inhalation studies which are relevant to field exposure, there was no evidence of delayed neurotoxicity in hens. In a special investigative study, litters of neonatal mice (10 days of age) and their mothers were exposed to aerosol concentrations of 5, 15, or 50 mg/m³ for 6.3 hours/day for 7 successive days. Motor activity was measured in the offspring at 4 months of age (approximately 3.5 months post-exposure). At 50 mg/m³, all of the offsprings died or were sacrificed in a moribund state following the first exposure. Mortalities were not observed at any of the other levels. Clinical symptoms were observed immediately after exposure in young mice at 15 mg/m³, and included decreased motility, temporary scratching, and tonic convulsions. There was an increase in motor activity in mice at 15 mg/m³. Histopathological investigations did not reveal any treatment-related findings in mice at the age of 4 months.

12. ECOLOGICAL INFORMATION:

This product is extremely toxic to fish and aquatic invertebrates, and is highly toxic to bees. Bayer will provide a summary of specific data upon written request. As with any pesticide, this product should be used according to label directions and should be kept out of streams, lakes and other aquatic habitats of concern. In event of a spill emergency, call 1-800-414-0244.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD.....: Follow container label instructions for disposal of wastes generated during use in compliance with the FIFRA product label. In other situations, bury in an EPA approved landfill or burn in an incinerator approved for pesticide destruction.

EMPTY CONTAINER PRECAUTIONS.: Do not reuse container without written permission and instructions from Bayer. Empty, clean and dispose in accordance with state and local laws.

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME.....: beta-Cyfluthrin
FREIGHT CLASS PACKAGE.....: Insecticides, NOI, NMFC 102100
PRODUCT LABEL.....: TEMPO SC Ultra Premise Spray

DOT (DOMESTIC SURFACE)

HAZARD CLASS OR DIVISION: Non-Regulated

It is not expected that a mist or vapor hazard would exist from the normal transportation of this liquid substance.

IMO / IMDG CODE (OCCAN)

HAZARD CLASS DIVISION NUMBER...: Non-Regulated

ICAO / IATA (AIR)

HAZARD CLASS DIVISION NUMBER...: Non-Regulated

15. REGULATORY INFORMATION:

OSHA STATUS.....: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA STATUS.....: This product is exempt from TSCA Regulation under FIFRA Section 3 (2) (B) (ii) when used as a pesticide.

CERCLA REPORTABLE QUANTITY...: No components listed.

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15. REGULATORY INFORMATION (Continued)

SARA TITLE III:

SECTION 302 EXTREMELY

HAZARDOUS SUBSTANCES...: No components listed.

SECTION 311/312

HAZARD CATEGORIES.....: Immediate Health Hazard

SECTION 313

TOXIC CHEMICALS.....: beta-Cyfluthrin (11.8%) - CAS # 68359-37-5

RCRA STATUS.....: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

16. OTHER INFORMATION:

NFPA 704M RATINGS: Health Flammability Reactivity Other
 1 1
 0-Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. NFPA ratings are provided by Bayer as a customer service.

REASON FOR ISSUE.....: Create new MSDS
 PREPARED BY.....: V. C. Standart
 APPROVED BY.....: D. C. Eberhart
 TITLE.....: Director Product Safety & Stewardship
 APPROVAL DATE.....: 05/06/2002
 SUPERSEDES DATE.....: None
 MSDS NUMBER.....: 29752

 This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Bayer Corporation. The data on this sheet relates only to the specific material designated herein. Bayer Corporation assumes no legal responsibility for use or reliance upon these data.

Product Code: 21648
 Approval date: 05/06/2002

MSDS Page 9
 Last page



It's Really Going Places.

Consumer Product Information

TalstarOne™ Multi-Insecticide

Date Prepared: 23 April, 2004

1. Product Information

Dilution of TalstarOne multi-insecticide, EPA Reg. # 279-3206
Chemical Family: Pyrethroid Insecticide

2. Manufacturer Information

Manufacturer:

FMC Corporation
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103

Telephone Numbers:

Emergency Phone: (800)-331-3148
Spill Emergency: (800)-331-3148
Technical Information: (800)-321-1362

3. Active Ingredient

Bifenthrin (0.12%) dilution
Typical use rates are between 0.001% and 0.06%

CAS No.

82657-04-3

4. General Information and Precautions

Highly toxic to fish and aquatic organisms. Care should be used when spraying to avoid fish and reptile pets. Wash thoroughly with soap and water after handling.

5. Health Hazard Information

General Health/Toxicity Information for 0.12% Suspension:

Acute Oral LD50	>20,000 mg/kg
Acute Dermal LD50	>10,000 mg/kg

This diluted material has a low oral and dermal toxicity, it is minimally irritating to the eyes and non-irritating to the skin. In rare occurrences, exposure to TalstarOne multi-insecticide end use dilution produces skin sensations such as burning, numbness or tingling during application. These sensations generally occur in the area of the body contacted by the diluted product and last for a few hours. This reaction, should it occur, produces some discomfort but does not result in skin damage.

6. First Aid Procedures (Dilutions or Emulsions Only)

- Ingestion: Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. If any discomfort persists, obtain medical attention.
 - Inhalation: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.
 - Dermal: Wash with plenty of soap and water.
 - Eye: Flush with plenty of water. Get medical attention if irritation occurs and persists.
 - Note to Physician or Emergency Personnel: TalstarOne multi-insecticide suspension contains a low concentration of the pyrethroid bifenthrin and primarily water. Should reversible skin sensations occur, skin salves have been found useful in reducing discomfort. Treatment is otherwise removal of exposure followed by symptomatic and supportive care.
-

7. Fire and Hazards Information

- The water-based suspension of TalstarOne multi-insecticide is not explosive or flammable.
-

8. Environmental Hazards Information

- This product is extremely toxic to fish. Do not contaminate water when disposing of equipment wash-waters. Do not apply directly to any body of water. Care should be used when spraying to avoid fish and reptiles.
-

9. Storage and Disposal and Spill Information

- Keep out of reach of children. Store in a cool, dry place and avoid excess heat. Do not put concentrate or dilute material into food or drink containers.
 - Isolate and post spill area. Keep animals and unprotected persons out of area. Keep emulsion out of streams and sewers. Dike to confine spills, and absorb with absorbent such as clay, sand or cat litter. Place in a DOT approved drum and contact appropriate regulatory agencies prior to disposal. To decontaminate spill area, tools and equipment, wash with a detergent/water mixture and properly dispose of solution as contaminated waste.
-

10. Additional Information

- For safety and health information concerning the undiluted concentrate product, refer to the Material Safety Data Sheet for TalstarOne multi-insecticide.
-

Disclaimer: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Status: Effective 4/2004

TalstarOne and FMC Logo - FMC trademarks

BC039

CONTRAC®

MSDS

Date of Issue:
FEBRUARY 1995

MANUFACTURER'S ADDRESS: BELL LABORATORIES, INC. 3699 KINSMAN BLVD., MADISON WI 53704		PREPARED BY: VJD-CAR	TELEPHONE NO.: (608) 241-0202	EMERGENCY PHONE NO.: Contact your local Poison Control Center
PRODUCT NAME: CONTRAC®		CAS NO.: 28772-56-7		
CHEMICAL FAMILY: Coumarin		CHEMICAL NAME & SYNONYMS: 3-[3-(4'-Bromo-[1,1'-biphenyl]-4-yl)-3-hydroxy-1-phenylpropyl]- 4-hydroxy-2H-1-benzopyran-2-one		
CHEMICAL FORMULA: C ₃₀ H ₂₃ BrO ₄		TRADE NAME & SYNONYMS: Bromadiolone		
SECTION I. HAZARDOUS INGREDIENTS				
ACTIVE INGREDIENTS: Bromadiolone		% 0.005	CURRENT TLV 500 mg/kg based on beagle dog	
SECTION II. PHYSICAL DATA OF ACTIVE INGREDIENT				
APPEARANCE & ODOR: White odorless powder	MOLECULAR WEIGHT: 527.4	MELT POINT: 200-210°C	SPECIFIC GRAVITY: NA	
VAPOR DENSITY (AIR=1): NA	COLOR: White	BULK DENSITY: 0.33 gm/cc	BOILING POINT: NA	
VAPOR PRESSURE: NA	SOLEBILITY: 12 mg/l (water)	WATER REACTIVE: NA	EVAPORATION RATE: NA	
SECTION III. FIRE & EXPLOSION DATA OF PRODUCT				
FLASH POINT F (METHOD USED): NA		FLAMMABLE LIMIT: NA	AUTOIGNITION TEMP: NA	
EXTINGUISHING MEDIA: Extinguish with water, foam or inert gas.				
SPECIAL FIRE FIGHTING PROCEDURES: None				
UNUSUAL FIRE OR EXPLOSION HAZARDS: None				
SECTION IV. REACTIVITY HAZARD DATA OF ACTIVE INGREDIENT				
STABILITY: Stable	CONDITIONS TO AVOID: NA			
POLYMERIZATION: Will not occur.	CONDITIONS TO AVOID: NA			
INCOMPATIBILITY (MATERIALS TO AVOID): Strong Bases		HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide / Carbon Dioxide		
SECTION V. TOXICITY DATA				
LD50, ORAL (INGESTION) (Tech) 1.125 mg/kg [Rat] 1.75 mg/kg [Mouse]	LD50, DERMAL (SKIN CONTACT): (1% Al) 650 mg/kg [Rabbit]	INHALATION: LC50 (1% Al) 9.23 mg/l x 1 hr [Rat]		
FISH LC50: 1.4 mg/l [Rainbow Trout] 3.0 mg/l [Bluegill sunfish]	SKIN AND EYE IRRITATION: (1% Al) Non-irritating	LD50 ORAL: (TECH) 10 mg/kg [Dog]		
SECTION VI. HEALTH HAZARD DATA OF PRODUCT				
PRIMARY ROUTE OF ENTRY: X Ingestion — Skin & Eye contact — Inhalation — Skin absorption		MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None		SIGNAL WORD: Caution
HEALTH HAZARDS: 1- Caution: May be irritating.		SIGNS & SYMPTOMS OF EXPOSURE: May reduce clotting ability of the blood and cause bleeding.		
EMERGENCY FIRST AID PROCEDURES: Eyes: Flush with plenty of water. Skin: Wash with soap & water. Inhalation: None. Ingestion: Administer Vitamin K ₁ intramuscularly or orally as indicated in bishydroxycoumarin overdoses. Repeat as necessary based on monitoring of prothrombin times.				
SPECIAL PROTECTION INFORMATION: None				
SECTION VII. CONTROL & PROTECTIVE MEASURES OF PRODUCT				
RESPIRATOR TYPE: None				
EYE PROTECTION: None	GLOVES: Rubber gloves	VENTILATION: None		
OTHER PROTECTIVE MEASURES: None				
SECTION VIII. SPILL OR LEAK PROCEDURE OF PRODUCT				
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: General clean-up.				
WASTE DISPOSAL METHOD: Product that cannot be used according to label instructions, must be disposed of according to applicable Federal, State or Local procedures.				
SECTION IX. SPECIAL PRECAUTIONS & STORAGE DATA OF PRODUCT				
STORAGE TEMPERATURE: Room temperature.		AVERAGE SHELF LIFE: Bait is stable for a minimum of 1 year when stored properly.		
SPECIAL SENSITIVITY (HEAT, LIGHT, MOISTURE): Avoid exposure to light and humidity.				
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid lakes, streams or ponds.				
SECTION X. SHIPPING DATA OF PRODUCT				
D.O.T. SHIPPING NAME: Confrac		TECHNICAL SHIPPING NAME: Rodenticide containing Bromadiolone.		
D.O.T. HAZARD CLASSIFICATION: Non-hazardous				
D.O.T. LABELS REQUIRED: None		FREIGHT CLASSIFICATION: Class 60		
WARRANTY: The information provided in this Material Safety Data Sheet has been obtained from sources believed to be reliable. Bell Labs provides no warranties, either expressed or implied and assumes no responsibility for the accuracy or completeness of the data contained herein. This information is offered for your consideration and investigation. You should satisfy yourself that you have all current data relevant to your particular use.				

APPENDIX 3

LAB REPORTS

ITEM 1

RECEIVED

SEP 19 2006

PRO



ILUKA

September 18, 2006

Hand Delivered

Iluka Resources Inc.
Virginia Operations
12472 St. John Church Rd.
Stony Creek, VA 23882

T: +1 434 348 4300
F: +1 434 246 3039

www.iluka.com

RE: Report of Analysis: Whole Effluent Toxicity (WET) conducted by Coastal Bioanalyst Inc. on Treated Effluent from Outfall 001 collected July 26, 2006 at the Iluka Resources Inc. Old Hickory Processing Plant
VPDES Permit # VA0090981
3rd Quarter 2006

Mr. Corwin Chamberlain
Environmental Specialist II
Department of Environmental Quality - Piedmont Regional Office
4949-A Cox Road
Glen Allen, VA 23060

Dear Mr. Chamberlain:

The 3rd Quarter 2006 Whole Effluent Toxicity (WET) sampling was conducted on July 26, 2006. Representatives of the Iluka Resources Inc. Environmental, Health and Safety Department and P. D. & J. Licensed Environmental Consultants conducted the sampling and Coastal Bioanalyst Inc. of Gloucester, VA conducted the analyses. Results of the Whole Effluent Toxicity sampling are attached. If you have any questions or require additional information please contact me at 434.348.4316 Direct or 804.721.7312 mobile.

Regards,

Kevin Rideout
EHS&T Technician

Attachments:

- 1) Results of Whole Effluent Toxicity (WET) sampling conducted July 26, 2006 - 12 letter size pages - 2 copies

Cc: Ray R. Jenkins, Jr., Environmental Engineer Senior, DEQ-PRO
Shawn Conaway, Technical Manager, Iluka Resources Inc.
Jack Rayburn, EHS &T Supervisor, Iluka Resources Inc.

Client: Iluka Resources, Inc.
 Project ID: ILUK0602
 Client Sample ID: Outfall 001
 Permit No: VA0090981
 Sample Period: 7/26/06



Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To: Mr. Kevin Rideout Iluka Resources, Inc. 12472 St. John Church Road Stony Creek, VA 23882-0126	Prepared By: Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director
--	---

Acute Test Results				
Species-Test Method	48-h LC50	95% C.L.	T.U. _{Ac}	NOAEC
<i>C. dubia</i> EPA 2002.0	56.8	44.8-76.0	1.76	N/A
<i>P. promelas</i> EPA 2000.0	>100	N/A	<1.00	N/A

Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Acute Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	6.3	13	25	50	100
<i>C. dubia</i> EPA 2002.0	Survival (%):	100	100	100	85	60	20
<i>P. promelas</i> EPA 2000.0	Survival (%):	100	100	100	95	90	80

Test Information	Start Date/Time	Organism	Hatch/Harvest	Acclimation	Acclimation	Test
Species-Method	End Date/Time	Source	Date/Time	Temp.	Water	Aerated?
<i>C. dubia</i> EPA 2002.0	7/26/06 1525 7/28/06 1515	CBI Stock	7/25/06 1615 7/26/06 1010	25° C	Mod. Hard Syn. FW	No
<i>P. promelas</i> EPA 2000.0	7/26/06 1520 7/28/06 1510	CBI Stock	7/20/06 1100 7/21/06 1100	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Acute Test	
Water Quality Parameter (Units)	Sample	Dilution Water
Arrival Temperature (°C)	4	N/A
Use Temperature (°C)	25	25
Conductivity (µS/cm)	2670	291
pH (S.U.)	8.02	7.68
Dissolved Oxygen (mg/l)	8.2	8.2
Total Hardness (mg/l as CaCO ₃)	1686	84
Alkalinity (mg/l as CaCO ₃)	23	58
Total Residual Chlorine (mg/l)	<Q.L.	N/A
Ammonia (mg/l NH ₃ -N)	<1.0	N/A

Dilution water = Moderately hard synthetic freshwater made with ASTM Type I deionized water

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1 st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
ILUK0602-A	7/26/06 0930	7/26/06 1520, 1525	N/A	N/A

Client: Iluka Resources, Inc.
 Project ID: ILUK0602
 Client Sample ID: Outfall 001
 Permit No: VA0090981
 Sample Period: 7/26/06



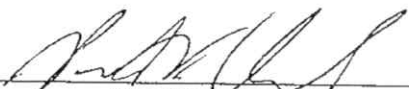
Acute Test Water Quality (Mean/Std. Dev.)												
Test:	<i>C. dubia</i> 2002.0						<i>P. promelas</i> 2000.0					
% Conc:	Cont.	6.3	13	25	50	100	Cont.	6.3	13	25	50	100
Temp. (°C)	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0
D.O. (mg/l)	8.1 0.1	8.1 0.1	8.1 0.2	8.0 0.2	8.0 0.2	8.0 0.2	8.0 0.2	8.0 0.2	8.0 0.2	7.9 0.2	7.9 0.3	7.8 0.4
pH (S.U.)	7.76 0.07	7.73 0.07	7.73 0.06	7.73 0.05	7.67 0.05	7.64 0.33	7.54 0.13	7.60 0.06	7.60 0.07	7.61 0.08	7.56 0.14	7.58 0.39

Acute Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures					
Species-Method (Ref. Test Date)	Data Source	% Control Survival	48-h LC50	95% C.L./A.L. for LC50	RTT in Control?
<i>C. dubia</i> 2002.0 (7/17/06-7/19/06)	RTT	100	550	508-596	Yes
	CC	100	569	514-624	
<i>P. promelas</i> 2000.0 (7/17/06-7/19/06)	RTT	100	910	868-955	Yes
	CC	99	890	788-993	

Note: RTT = Reference Toxicant Test, CC = Control Chart

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory.

APPROVED:


 Peter F. De Lisle, Ph.D.
 Technical Director

8/1/06
 Date

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

N/A: Not applicable. N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{LC} = 100/LC50$. $T.U._{NOEC} = 100/NOEC$. A dimensionless unit.

CERIODAPHNIA DUBIA STATIC ACUTE WET TEST
(ACD)

COASTAL BIOANALYSTS, INC.
FORM ET 51A EFFECTIVE DATE: 5/15/02

NOTES:

% Effluent	I.D.	Day 0 Live	Day 1 Live	Day 2 Live	Final % Survival	% Effluent	I.D.	Day 0 Live	Day 1 Live	Day 2 Live	Final % Survival
Control	C-1	5	5	5	100	25	3-1	5	5	5	85
	C-2	5	5	5			3-2	5	5	4	
	C-3	5	5	5			3-3	5	5	4	
	C-4	5	5	5			3-4	5	5	4	
62.5	1-1	5	5	5	100	50	4-1	5	5	2	60
	1-2	5	5	5			4-2	5	5	3	
	1-3	5	5	5			4-3	5	5	3	
	1-4	5	5	5			4-4	5	5	4	
12.5	2-1	5	5	5	100	100	5-1	5	5	0	20
	2-2	5	5	5			5-2	5	5	1	
	2-3	5	5	5			5-3	5	5	2	
	2-4	5	5	5			5-4	5	4	1	

Initials: PB CT CT
Count Time: 1525 0905 1915 Test End Time

Parameter	Treatment I.D.	Day 0	Day 1	Day 2
Temp. (°C)	C	25	25	25
	1	25	25	25
	2	25	25	25
	3	25	25	25
	4	25	25	25
	5	25	25	25
pH (S.U.)	C	7.68	7.81	7.79
	1	7.66	7.74	7.79
	2	7.66	7.74	7.78
	3	7.69	7.72	7.78
	4	7.72	7.68	7.67
	5	8.02	7.43	7.47
D.O. (mg/l)	C	8.2	8.1	8.0
	1	8.2	8.1	8.0
	2	8.2	8.1	7.9
	3	8.2	8.0	7.8
	4	8.2	8.0	7.8
	5	8.2	8.0	7.8
Conduct. (uS/cm)	C	291		292
	1	703		
	2	1027		
	3	1422		
	4	1941		
	5	2670		2660
Replicate # Meas.:	1	5	3	
Initials:	PB	CT	CT	
TRC (mg/l) in highest conc. at end of test:				NA

Species: *Ceriodaphnia dubia*

Source: CBI stock cultures ✓

Other: _____

Brood Date/time start: 7/23/06 1615

Release:

Date/time end: 7/24/06 1016

Acclimation: Water: Mod. hard syn. FW ✓

Other: _____

Temperature (°C): 25

Feeding: Prior to test: YCT/Selenastrum
During test: Not Fed

Illumination: 16L:8D 10-20 uE/m²/s

Test chamber size: 30 ml

Solution volume: 15 ml ml

Number of replicates/treatment: 4

Initial number of daphnids/replicate: 5

Randomization template number: 24

Set up: Date (Day 0): 7/26/06

Time water added: 1500

Time daphnids added: 1525

Set up by (initials): PB

TEST I.D. ILUK0602 ACD

Acute Ceriodaphnia Test-48 Hr Survival

Start Date: 7/26/2006 15:25 Test ID: ILUK0602 Sample ID: 1
 End Date: 7/28/2006 15:15 Lab ID: CBI Sample Type: WW
 Sample Date: Protocol: EPAA 91-EPA Acute Test Species: CD-Ceriodaphnia dubia
 Comments:

Conc-%	1	2	3	4
CONTROL	1.0000	1.0000	1.0000	1.0000
6.25	1.0000	1.0000	1.0000	1.0000
12.5	1.0000	1.0000	1.0000	1.0000
25	1.0000	0.8000	0.8000	0.8000
50	0.4000	0.6000	0.6000	0.8000
100	0.0000	0.2000	0.4000	0.2000

Transform: Arcsin Square Root								Number	Total
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Resp	Number
CONTROL	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20
6.25	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20
12.5	1.0000	1.0000	1.3453	1.3453	1.3453	0.000	4	0	20
25	0.8500	0.8500	1.1667	1.1071	1.3453	10.206	4	3	20
50	0.6000	0.6000	0.8910	0.6847	1.1071	19.366	4	8	20
100	0.2000	0.2000	0.4594	0.2255	0.6847	40.823	4	16	20

Auxiliary Tests

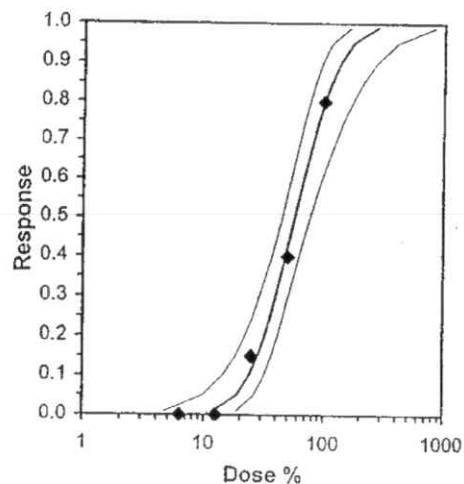
Shapiro-Wilk's Test indicates non-normal distribution ($p \leq 0.01$)
 Equality of variance cannot be confirmed

Statistic	Critical	Skew	Kurt
0.75948	0.884	0.22775	2.1946

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits	Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	3.41157	0.66385	2.11042 4.71272	0	0.6049	7.81473	0.9	1.7544	0.29312	4
Intercept	-0.9852	1.13395	-3.2078 1.2373							
TSCR										

Point	Probits	%	95% Fiducial Limits
EC01	2.674	11.8167	4.7008 18.3504
EC05	3.355	18.7179	9.68297 26.1417
EC10	3.718	23.9193	14.1163 31.8317
EC15	3.964	28.2226	18.0905 36.5836
EC20	4.158	32.1885	21.908 41.0945
EC25	4.326	36.0322	25.6728 45.6635
EC40	4.747	47.878	37.0016 61.6224
EC50	5.000	56.8064	44.786 75.9664
EC60	5.253	67.3998	53.1215 95.5647
EC75	5.674	89.5579	68.4189 144.314
EC80	5.842	100.252	75.147 171.092
EC85	6.036	114.34	83.5808 209.258
EC90	6.282	134.911	95.2405 270.475
EC95	6.645	172.4	115.071 397.393
EC99	7.326	273.084	162.761 824.441



PIMEPHALES PROMELAS STATIC / TE WET TEST
48-H TEST (APP)

COAST BIOANALYSTS, INC
FORM F1041A EFFECTIVE DATE: 5/15/02

% Effluent	I.D.	Day 0 Live	Day 1 Live	Day 2 Live	Final % Survival
Lab Control	C-1	10	10	10	100
	C-2	10	10	10	
0.25	1-1	10	10	10	100
	1-2	10	10	10	
12.5	2-1	10	10	10	100
	2-2	10	10	10	
25	3-1	10	10	9	95
	3-2	10	10	10	
50	4-1	10	9	9	90
	4-2	10	9	9	
100	5-1	10	10	9	80
	5-2	10	8	7	
Initials:		PB	CT	CT	
Count Time:		1520	0855	1510	*Test End Time

Species: *Pimephales promelas*

Source: CBI stock cultures ✓

Other: _____

Hatch: Date/time start: 7/20/06 1100

Date /time end: 7/21/06 1100

Acclimation: Water: Mod. hard syn. FW ✓

Other: _____

Temperature (°C): 25

Feeding: Prior to test: *Artemia ad libitum*
During test: Not fed

Illumination: 16L:8D 10-20 uE/m²/s

Test chamber size: 600 ml 250 ml _____ ml

Solution volume: 500 ml _____ ml

Number of replicates/treatment: 2

Initial number of fish/replicate: 10

Randomization template number: 1, 2

Set up: Date (Day 0): 7/26/06

Time water added: 1500

Time fish added: 1520

Set up by (initials): PB

NOTES:

Parameter	Treatment I.D.	Day 0	Day 1	Day 2
Temp. (°C)	C	25	25	25
	1	25	25	25
	2	25	25	25
	3	25	25	25
	4	25	25	25
	5	25	25	25
pH (S.U.)	C	7.68	7.42	7.53
	1	7.66	7.55	7.61
	2	7.66	7.53	7.61
	3	7.69	7.54	7.60
	4	7.72	7.50	7.46
	5	8.02	7.46	7.22
D.O. (mg/l)	C	8.2	8.0	7.9
	1	8.2	8.0	7.9
	2	8.2	7.9	7.8
	3	8.2	7.8	7.8
	4	8.2	7.8	7.6
	5	8.2	7.6	7.5
Conduct. (uS/cm)	C	291		292
	1	705		
	2	1027		
	3	1422		
	4	1961		
	5	2670		2730
Replicate # Meas.:		1	2	1.
Initials:		PB	CT	CT
TRC (mg/l) in highest conc. at end of test:				NA

TEST I.D. IL060602 -APP

EFFLUENT SAMPLE & DILUTION WATER CHARACTERISTICS
FRESHWATER TESTS

COASTAL BIOANALYSTS, INC
FORM E-031B EFFECTIVE DATE: 10/17/02

INITIAL SAMPLE CHARACTERIZATION ¹							
Sample Bottle ²	A-1						NOTES:
Tot. Resid. Chlorine (mg/l)	C6C						
Hardness (mg/l CaCO ₃)	1686						
Alkalinity (mg/l CaCO ₃)	23						
NH ₃ -N (mg/l)	21.0						
Color/Appearance ³	CY						
Obvious Odor?	ND						
Date/Time	7/26/05						
Initials	AB						
SAMPLE PREPARATION MEASUREMENTS (100% concentration)							
Sample Bottle	A-1						
Prep Temperature (°C)	25						
Conductivity (uS/cm) ⁴	2670						
D.O. (mg/l) After Warming	8.2						
Aeration Time (min)	-						
Adjusted D.O.	-						
Final pH (S.U.)	8.02						
Tot. Resid. Chlorine (mg/l) ⁵	ND						
Sample Filtered (60 um)?	NO						
Date/Time	7/26/05						
Initials	AB						
DILUTION WATER CHARACTERISTICS							
Vat Number	2						
Temperature (°C)	25						
Conductivity (uS/cm)	291						
D.O. (mg/l)	8.2						
pH (S.U.)	7.68						
Hardness (mg/l CaCO ₃)	84						
Alkalinity (mg/l CaCO ₃)	58						
Date/Time	7/26/05						
Initials	AB						

¹Q.L. = Quantification Limit, N.D. = Not Determined/Measured, NA = Not Applicable

²Bottle number = 9th or 9th and 10th characters of Laboratory Sample I.D. (e.g. "A", "A-1", "A-2"; see SOP SPLS202)

³C-Clear, O-Opaque, T-Turbid, S-Solids (SI-Slight, M-Moderate, H-Heavy), Y-Yellow, B-Brown, BI-Black, G-Green

⁴Conductivity measured on first use of sample only

⁵Total residual chlorine measured after sample prep only if present in initial sample characterization

PROJECT I.D.

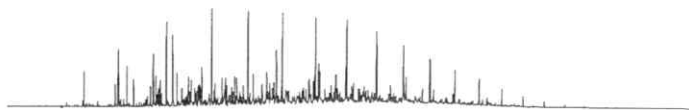
FLUOR42

(First 8 characters of Laboratory Sample ID)

ITEM 2

Primary Laboratories, Inc.

7423 Lee Davis Road • Mechanicsville, VA 23111 • Telephone (804) 559-9004 • Fax (804) 559-9306



ANALYTICAL LABORATORY REPORT

13-Dec-06

Iluka Resources, Inc
Attn: Kevin Rideout
12472 St Johns Church Road
Stoney Creek, VA 23882

Date Received: 21-Nov-06
Date Sampled: 21-Nov-06
Work Order No: 0611185-01
Client ID: #1 - #11

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Time Analyzed	Tech. Initials
Dissolved Metals							
Antimony	<0.100	0.100	mg/L	200.2/200.7	04-Dec-06	15:11	AB
Arsenic	<0.050	0.050	mg/L	200.2/200.7	29-Nov-06	15:59	AB
Cadmium	<0.010	0.010	mg/L	200.2/200.7	29-Nov-06	15:59	AB
Mercury	<0.0002	0.0002	mg/L	245.1	30-Nov-06	15:37	AB
Nickel	0.021	0.020	mg/L	200.2/200.7	29-Nov-06	15:59	AB
Selenium	0.064	0.050	mg/L	200.2/200.7	04-Dec-06	15:11	AB
Silver	<0.020	0.020	mg/L	200.2/200.7	29-Nov-06	15:59	AB
Zinc	0.044	0.010	mg/L	200.2/200.7	29-Nov-06	15:59	AB
Chromium	<0.020	0.020	mg/L	200.2/200.7	29-Nov-06	15:59	AB
Chromium III	<0.020	0.020	mg/L	calc.	13-Dec-06		PB
Chromium VI	<0.005	0.005	mg/L	218.4	22-Nov-06	11:00	NA
Cyanide	<0.010	0.010	mg/L	335.2	28-Nov-06	11:00	MS
Hydrogen Sulfide	<0.05	0.05	mg/L	376.1	04-Dec-06	15:20	HV
Fecal Coliform	2	2	MPN/100ml	9221E	21-Nov-06	17:00	MS
Chlorides	14.1	0.1	mg/L	325.3	30-Nov-06	15:30	NA
Chlorine, Total Residual	<0.010	0.010	mg/L	330.5	22-Nov-06	14:50	HV
Tributyltin	<30	30	ng/L	GC/FID	01-Dec-06	16:09	SC*

Primary Laboratories, Inc.
Results

13-Dec-06

Date Sampled: 21-Nov-06
Work Order No: 0611185-01
Client ID: #1 - #11

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Time Analyzed	Tech. Initials
Pesticides							
Aldrin	<0.05	0.05	ug/L	608	22-Nov-06	22:24	HV
Chlordane	<0.20	0.20	ug/L	608	22-Nov-06	22:24	HV
Dieldrin	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
4,4-DDT	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
4,4-DDE	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
4,4-DDD	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
Endosulfan sulfate	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
Endosulfan I	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
Endosulfan II	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
Endrin	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
Gamma-BHC (Lindane)	<0.50	0.50	ug/L	608	22-Nov-06	22:24	HV
Beta-BHC	<0.50	0.50	ug/L	608	22-Nov-06	22:24	HV
Alpha-BHC	<0.50	0.50	ug/L	608	22-Nov-06	22:24	HV
Heptachlor	<0.50	0.50	ug/L	608	22-Nov-06	22:24	HV
Kepone	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
Methoxychlor	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
Mirex	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
Endrin Aldehyde	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
Heptachlor Epoxide	<0.10	0.10	ug/L	608	22-Nov-06	22:24	HV
PCB 1016	<1.0	1.0	ug/L	608	22-Nov-06	22:24	HV
PCB 1221	<1.0	1.0	ug/L	608	22-Nov-06	22:24	HV
PCB 1232	<1.0	1.0	ug/L	608	22-Nov-06	22:24	HV
PCB 1242	<1.0	1.0	ug/L	608	22-Nov-06	22:24	HV
PCB 1248	<1.0	1.0	ug/L	608	22-Nov-06	22:24	HV
PCB 1254	<1.0	1.0	ug/L	608	22-Nov-06	22:24	HV
PCB 1260	<1.0	1.0	ug/L	608	22-Nov-06	22:24	HV
Toxaphene	<5.0	5.0	ug/L	608	22-Nov-06	22:24	HV

Date Sampled: 21-Nov-06
Work Order No: 0611185-01
Client ID: #1 - #11

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Time Analyzed	Tech. Initials
Organophosphorus Pesticides							
Demeton	<1	1	ug/L	622	12-Dec-06	19:01	SC*
Malathion	<1	1	ug/L	622	12-Dec-06	19:01	SC*
Chlorpyrifos	<0.2	0.2	ug/L	622	12-Dec-06	19:01	SC*
Parathion	<1	1	ug/L	622	12-Dec-06	19:01	SC*
Guthion	<1	1	ug/L	622	12-Dec-06	19:01	SC*

Primary Laboratories, Inc.
Results

13-Dec-06

Test Method: 624
Date Analyzed: 28-Nov-06
Time Analyzed: 18:10
Technician: PB
Date Sampled: 21-Nov-06
Units of Measure: ug/L
Work Order No: 0611185-01
Client ID: #1 - #11

Test Description	Final Result	Detection Limit
✓ Acrolein	<5	5
✓ Acrylonitrile	<5	5
✓ Benzene	<5	5
✓ Bromoform	<5	5
✓ Carbon tetrachloride	<5	5
✓ Chlorobenzene	<5	5
✓ Chlorodibromomethane	<5	5
✓ Chloroform	<5	5
✓ Dichloromethane	<5	5
✓ Dichlorobromomethane	<5	5
✓ 1,1-Dichloroethylene	<5	5
✓ 1,2-Dichloroethane	<5	5
✓ 1,2-trans-Dichloroethylene	<5	5
✓ 1,2-Dichloropropane	<5	5
✓ 1,3-Dichloropropene	<5	5
✓ Ethylbenzene	<5	5
✓ Methylene Bromide	<5	5
✓ 1,1,2,2-Tetrachloroethane	<5	5
✓ Tetrachloroethylene	<5	5
✓ Toluene	<5	5
✓ Trichloroethylene	<5	5
✓ 1,1,2-Trichloroethane	<5	5
✓ Vinyl Chloride	<5	5
✓ Monochlorobenzene	<5	5
✓ Xylenes (Total)	<15	15

Primary Laboratories, Inc.
Results

13-Dec-06

Test Method: 625
Date Analyzed: 22-Nov-06
Time Analyzed: 22:02
Technician: HV
Date Sampled: 21-Nov-06
Units of Measure: ug/L
Work Order No: 0611185-01
Client ID: #1 - #11

Test Description	Final Result	Detection Limit
✓ Acenaphthene	<10	10
✓ Anthracene	<10	10
✓ Benzo(a) anthracene	<10	10
✓ Benzo(b) fluoranthene	<10	10
✓ Benzo(k) fluoranthene	<10	10
✓ Benzo(a)pyrene	<10	10
✓ Butyl benzyl phthalate	<10	10
✓ 2-Chlorophenol	<10	10
✓ Chrysene	<10	10
✓ Dibenzo(a,h)anthracene	<10	20
✓ Di-n-butyl phthalate	<10	10
✓ 1,2-Dichlorobenzene	<10	10
✓ 1,3-Dichlorobenzene	<10	10
✓ 1,4-Dichlorobenzene	<10	10
✓ 2,4-Dichlorophenol	<10	10
✓ Diethyl phthalate	<10	10
✓ 2,4-Dimethylphenol	<10	10
✓ Di-2-Ethylhexyl Phthalate	<10	10
✓ 2,4-Dinitrotoluene	<10	10

Primary Laboratories, Inc.
Results

13-Dec-06

Test Method: 625 (Con't)
Date Analyzed: 22-Nov-06
Time Analyzed: 22:02
Technician: HV
Date Sampled: 21-Nov-06
Units of Measure: ug/L
Work Order No: 0611185-01
Client ID: #1 - #11

Test Description	Final Result	Detection Limit
✓ Fluoranthene	<10	10
✓ Fluorene	<10	10
✓ Indeno(1,2,3-cd) pyrene	<20	20
✓ Isophorone	<10	10
✓ Nitrobenzene	<10	10
✓ Pentachlorophenol	<10	10
✓ Phenol	<10	10
✓ Pyrene	<10	10
✓ 1,2,4-Trichlorobenzene	<10	10
✓ 2,4,6-Trichlorophenol	<10	10
✓ Naphthalene	<10	10

Signature: _____

Parry L. Bragg
Laboratory Manager

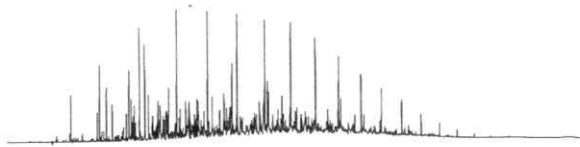
Date: _____

12-13-06

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Primary Laboratories, Inc.

7423 Lee Davis Road • Mechanicsville, VA 23111 • Telephone (804) 559-9004 • Fax (804) 559-9306



ANALYTICAL LABORATORY REPORT

15-May-07

Iluka Resources, Inc
Attn: Kevin Rideout
12472 St Johns Church Road
Stoney Creek, VA 23882

Date Received: 2-Apr-07
Date Sampled: 2-Apr-07
Work Order No: 0704009-01
Client ID: **Outfall 001 (MSP) Renewal**

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Time Analyzed	Tech. Initials
Dissolved Metals							
✓ Copper	<0.020	0.020	mg/L	200.2/200.7	5-Apr-07	15:21	AB
✓ Lead	<0.050	0.050	mg/L	200.2/200.7	5-Apr-07	15:21	AB
✓ Thallium	<0.002	0.002	mg/L	200.2/279.2	16-Apr-07	11:21	AB
✓ Nickel	<0.020	0.020	mg/L	200.2/200.7	5-Apr-07	15:21	AB
✓ Selenium	<0.050	0.050	mg/L	200.2/200.7	5-Apr-07	15:21	AB
✓ Zinc	0.041	0.010	mg/L	200.2/200.7	5-Apr-07	15:21	AB
BOD	<3.0	3.0	mg/L	405.1	4-Apr-07	07:30	NA
COD	22.1	2.0	mg/L	410.2	16-Apr-07	08:30	NA
TOC	5.38	1.00	mg/L	415.1	3-Apr-07	07:30	PB
✓ Gross Alpha	6.0±0.7	0.4	pci/l	900.0	20-Apr-07	08:00	SC*
✓ Gross Beta	21±3	5.7	pci/l	900.0	19-Apr-07	08:00	SC*
✓ Strontium-90	0.0±0.5	1.0	pci/l	905.0	23-Apr-07	9:23	SC*
✓ Tritium	30.1±87.2	144.1	pci/l	906.0	1-May-07	12:00	SC*

* Sub-Contracted

Primary Laboratories, Inc.
Results

15-May-07

Date Sampled: 2-Apr-07
Work Order No: 0704009-01
Client ID: Outfall 001 (MSP) Renewal

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Time Analyzed	Tech. Initials
Pesticides							
✓ Gamma-BHC (Lindane)	<0.50	0.50	ug/L	608	10-Apr-07	23:57	HV
✓ Methoxychlor	<0.10	0.10	ug/L	608	10-Apr-07	23:57	HV
✓ PCB 1016	<1.0	1.0	ug/L	608	10-Apr-07	23:57	HV
✓ PCB 1221	<1.0	1.0	ug/L	608	10-Apr-07	23:57	HV
✓ PCB 1232	<1.0	1.0	ug/L	608	10-Apr-07	23:57	HV
✓ PCB 1242	<1.0	1.0	ug/L	608	10-Apr-07	23:57	HV
✓ PCB 1248	<1.0	1.0	ug/L	608	10-Apr-07	23:57	HV
✓ PCB 1254	<1.0	1.0	ug/L	608	10-Apr-07	23:57	HV
✓ PCB 1260	<1.0	1.0	ug/L	608	10-Apr-07	23:57	HV

Primary Laboratories, Inc.
Results

15-May-07

Test Method: 625
Date Analyzed: 4-Apr-07
Time Analyzed: 16:35
Technician: HV
Date Sampled: 2-Apr-07
Units of Measure: ug/L
Work Order No: 0704009-01
Client ID: **Outfall 001 (MSP) Renewal**

Test Description	Final Result	Detection Limit
Benzidine	<10	10
bis-(2-Chloroethyl)ether	<10	10
bis-(2-Chloroisopropyl)ether	<10	10
2-Chloronaphthalene	<10	10
3,3-Dichlorobenzidine	<20	20
Dimethyl phthalate	<10	10
2,4-Dinitrophenol	<10	10
Hexachlorobenzene	<10	10
Hexachlorobutadiene	<10	10
Hexachlorocyclopentadiene	<10	10
Hexachloroethane	<10	10
Indeno(1,2,3-cd) pyrene	<20	20
2-Methyl-4,6-Dinitrophenol	<50	50
N-Nitrosodimethylamine	<10	10
N-Nitrosodiphenylamine	<10	10
N-Nitrosodi-n-propylamine	<10	10
1,2-Diphenylhrazine	<10	10

Signature: _____



Parry L. Bragg
Laboratory Manager

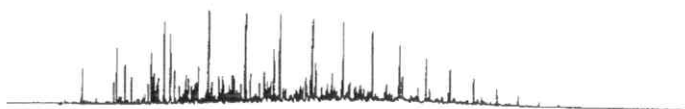
Date: _____



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ANALYTICAL LABORATORY REPORT

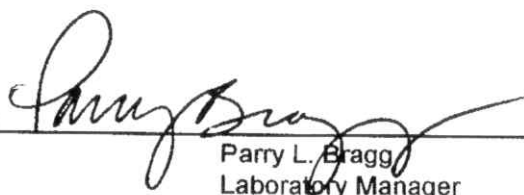
26-Jun-07

Iluka Resources, Inc
Attn: Kevin Rideout
12472 St Johns Church Road
Stoney Creek, VA 23882

Project: MSP Permit Renewal
Date Received: 19-Jun-07
Date Sampled: 18-Jun-07
Work Order No: 0706164-01
Client ID: Outfall 001

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Time Analyzed	Tech. Initials
✓ Ammonia	0.02	0.01	mg/L	350.3	25-Jun-07	08:00	NA
✓ Chloride	19.5	0.1	mg/L	325.3	26-Jun-07	09:00	NA
✓ Hydrogen Sulfide	<0.05	0.05	mg/L	376.1	19-Jun-07	13:30	NA

Signature: _____


Parry L. Bragg
Laboratory Manager

Date: _____

6/26/07

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ITEM 3

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

ILUKA RESOURCES INC. 9874
CHEE SAUNDERS
12472 ST. JOHN CHURCH RD.
STONY CREEK, VA 23882-0129

Lab Number: 00-A114305
Sample ID: ZIRCON
Sample Type: Solid waste
Site ID:

Project:
Project Name: VPDES
Sampler: CHEE SAUNDERS

Date Collected: 8/14/00
Time Collected: 13:45
Date Received: 8/15/00
Time Received: 10:00

TCLP Results

Analyte	Result	Units	Reg Limit	Matrix Spike		Date	Time	Analyst	Method	QC Batch
				Recovery (%)						
Arsenic	< 0.100	mg/l	5.0	106		8/22/00	7:52	G. Robinson	6010B	8236
Barium	< 1.00	mg/l	100	113		8/22/00	7:52	G. Robinson	6010B	8236
Cadmium	< 0.100	mg/l	1.0	100		8/22/00	7:52	G. Robinson	6010B	8236
Chromium	< 0.500	mg/l	5.0	103		8/22/00	7:52	G. Robinson	6010B	8236
Lead	< 0.500	mg/l	5.0	98		8/22/00	7:52	G. Robinson	6010B	8236
Mercury	< 0.0100	mg/l	0.20	100		8/22/00	7:58	G. McCord	7470A	9068
Selenium	< 0.100	mg/l	1.0	115		8/22/00	7:52	G. Robinson	6010B	8236
Silver	< 0.100	mg/l	5.0	105		8/22/00	7:52	G. Robinson	6010B	8236
TCLP Extraction	Initiated					8/16/00	17:30	K. Bundy	1311	6948

ND = Not detected at the report limit.

Matrix Spike Recovery for TCLP analytes reported from Batch QC

TCLP preparation follows method 1311, SW-846 Revision 3.

All results reported on a wet weight basis.

2960 Foster Creighton Dr
Knoxville, TN 37204
Tel: 615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

Laboratory Number: 00-A114305
Sample ID: ZIRCON

Page 2

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Report Approved By:



Report Date: 8/22/00

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director

Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 00323

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

ILUKA RESOURCES INC. 9874
CHEE SAUNDERS
12472 ST. JOHN CHURCH RD.
STONY CREEK, VA 23882-0129

Lab Number: 00-A114304
Sample ID: ILMENITE
Sample Type: Solid waste
Site ID:

Project:
Project Name: VPDES
Sampler: CHEE SAUNDERS

Date Collected: 8/14/00
Time Collected: 13:45
Date Received: 8/15/00
Time Received: 10:00

TCLP Results

Analyte	Result	Units	Reg Limit	Matrix Spike		Date	Time	Analyst	Method	QC Batch
				Recovery (%)						
Arsenic	< 0.100	mg/l	5.0	106		8/22/00	7:52	G. Robinson	6010B	8236
Barium	< 1.00	mg/l	100	113		8/22/00	7:52	G. Robinson	6010B	8236
Cadmium	< 0.100	mg/l	1.0	100		8/22/00	7:52	G. Robinson	6010B	8236
Chromium	< 0.500	mg/l	5.0	103		8/22/00	7:52	G. Robinson	6010B	8236
Lead	< 0.500	mg/l	5.0	98		8/22/00	7:52	G. Robinson	6010B	8236
Mercury	< 0.0100	mg/l	0.20	100		8/22/00	7:58	G. McCord	7470A	9068
Selenium	< 0.100	mg/l	1.0	115		8/22/00	7:52	G. Robinson	6010B	8236
Silver	< 0.100	mg/l	5.0	105		8/22/00	7:52	G. Robinson	6010B	8236
TCLP Extraction	Initiated					8/16/00	17:30	K. Dundy	1311	6948

ND = Not detected at the report limit.

Matrix Spike Recovery for TCLP analytes reported from Batch QC

TCLP preparation follows method 1311, SW-846 Revision 3.

All results reported on a wet weight basis.

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

Laboratory Number: 00-A114304
Sample ID: ILMENITE

Page 2

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Report Approved By:



Report Date: 8/22/00

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director

Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 00323

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

ILUKA RESOURCES INC. 9874
CHEE SAUNDERS
12472 ST. JOHN CHURCH RD.
STONY CREEK, VA 23882-0129

Lab Number: 00-A114303
Sample ID: MINERAL SAND CONCENTRATE
Sample Type: Solid waste
Site ID:

Project:
Project Name: VPDES
Sampler: CHEE SAUNDERS

Date Collected: 8/14/00
Time Collected: 13:45
Date Received: 8/15/00
Time Received: 10:00

TCLP Results

Analyte	Result	Units	Reg Limit	Matrix Spike		Date	Time	Analyst	Method	QC Batch
				Recovery (%)						
Arsenic	< 0.100	mg/l	5.0	106		8/22/00	7:52	G. Robinson	6010B	8236
Barium	< 1.00	mg/l	100	113		8/22/00	7:52	G. Robinson	6010B	8236
Cadmium	< 0.100	mg/l	1.0	100		8/22/00	7:52	G. Robinson	6010B	8236
Chromium	< 0.500	mg/l	5.0	103		8/22/00	7:52	G. Robinson	6010B	8236
Lead	< 0.500	mg/l	5.0	98		8/22/00	7:52	G. Robinson	6010B	8236
Mercury	< 0.0100	mg/l	0.20	100		8/22/00	7:58	G. McCord	7470A	9068
Selenium	< 0.100	mg/l	1.0	115		8/22/00	7:52	G. Robinson	6010B	8236
Silver	< 0.100	mg/l	5.0	105		8/22/00	7:52	G. Robinson	6010B	8236
TCLP Extraction	Initiated					8/16/00	17:30	K. Bundy	1311	6948

ND = Not detected at the report limit.

Matrix Spike Recovery for TCLP analytes reported from Batch QC

TCLP preparation follows method 1311, SW-846 Revision 3.

All results reported on a wet weight basis.

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

Laboratory Number: 00-A114303
Sample ID: MINERAL SAND CONCENTRATE

Page 2

These results relate only to the items tested.
This report shall not be reproduced except in full and with
permission of the laboratory.

Report Approved By:

J Mitchell

Report Date: 8/22/00

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director

Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 00323

ITEM 4



FROEHLING & ROBERTSON, INC.
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS
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"OVER ONE HUNDRED YEARS OF SERVICE"

Page 1 of 3

CERTIFICATE OF ANALYSIS

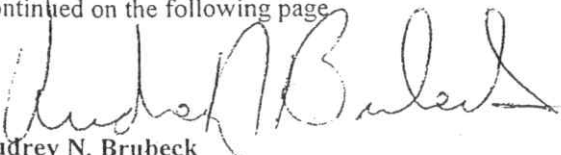
October 12, 2000

LAB #: 0009170
CLIENT: Iluka Resources, Inc.
12472 St. John Church Road
Stony Creek, VA 23882-0129
ATTN: Chee Saunders

PROJECT NAME: VPDES Stormwater
SAMPLED BY: S. Conaway
LAB RECEIPT: 9/26/00, 1630

PARAMETER	ANALYSIS DATE/TIME	METHOD	ANALYST
Silver	10/9/00, 1428	EPA 200.7	MDW
Alkalinity	10/10/00, 1100	SM18/2320 B	BCD
Ammonia-Nitrogen	9/26/00, 1700	SM18/4500-NH ₃ F	BCD
Arsenic	10/5/00, 1057	EPA 200.7	MDW
Barium	10/5/00, 1057	EPA 200.7	MDW
BOD	9/27/00, 1350	SM18/5210 B	AR/BCD
Cadmium	10/6/00, 0846	EPA 200.7	MDW
COD	9/28/00, 1000	HACH (SM18/5220 D)	BCD
Chromium	10/5/00, 1057	EPA 200.7	MDW
Metals Digest	9/29/00, 0940	EPA 600/4-79/020	DO
Iron	10/5/00, 1057	EPA 200.7	MDW
Mercury	10/3/00, 0900	EPA 245.1	RHS
Potassium	10/10/00, 1503	EPA 200.7	MDW
Sodium	10/6/00, 1551	EPA 200.7	MDW
Nitrite-Nitrogen	9/27/00, 1400	SM18/4500-NO ₂ B	BCD
Nitrate-Nitrogen	9/27/00, 1400	SM18/4110 B	BCD
Oil & Grease	9/28/00, 1430	SM18/5520 B	DO/BCD
Total Phosphorus	10/4/00, 1100	SM18/4500-P B&E	AR
Lead	10/5/00, 1057	EPA 200.7	MDW
Titanium	10/10/00, 1049	EPA 200.7	MDW
pH	9/26/00, 1615	EPA 150.1	BCD

Continued on the following page


Audrey N. Brubeck
Laboratory Manager
ANB/spt

CERTIFICATIONS: AIIIA ELLAP - 100533
VIRGINIA DRINKING WATER - 00150
NORTH CAROLINA DEHNR - 432
SOUTH CAROLINA DHEC - 93010001 & 93010002
MARYLAND DRINKING WATER - 279

HEADQUARTERS: 3015 DUMBARTON ROAD • BOX 27524 • RICHMOND, VA 23261-7524
TELEPHONE (804) 264-2701 • FAX (804) 264-1202 • www.FandR.com

BRANCHES: ASHEVILLE, NC • ATLANTA, GA • BALTIMORE, MD • CHARLOTTE, NC
CHESAPEAKE, VA • CROZET, VA • FAYETTEVILLE, NC • FREDERICKSBURG, VA
GREENVILLE, SC • RALEIGH, NC • ROANOKE, VA • STERLING, VA

CERTIFICATE OF ANALYSIS, continued

October 11, 2000

LAB #: 0009170
CLIENT: Iluka Resources, Inc.
12472 St. John Church Road
Stony Creek, VA 23882-0129
ATTN: Chee Saunders

PROJECT NAME: VPDES Stormwater

PARAMETER	ANALYSIS DATE/TIME	METHOD	ANALYST
Selenium	10/5/00, 1057	EPA 200.7	MDW
Sulfate	9/27/00, 1400	SM18/4110 B	BCD
TKN	9/27/00, 0800	SM18/4500-N Org C & NH ₃ E	AR
TOC	10/4/00, 0830	SM18/5310 C	BCD
Total Solids	9/26/00, 1700	SM18/2540 B	BCD
Total Suspended Solids	10/2/00, 1000	SM18/2540 D	AR

Results on the following page



RESULTS:

F&R# : 0009170-1
SAMPLE ID : Retention Pond #3
DATE/TIME : 9/26/00, 1245
MATRIX : Water grab

		Quant. Limit:
Silver, mg/L	BQL	0.2
Alkalinity, mg/L	15	0
Ammonia-Nitrogen, mg/L	0.10	0.05
Arsenic, mg/L	BQL	0.2
Barium, mg/L	BQL	0.1
BOD, mg/L	2	2
Cadmium, mg/L	BQL	0.2
COD, mg/L	37	30
Chromium, mg/L	BQL	0.1
Iron, mg/L	1.9	0.2
Mercury, mg/L	BQL	0.0005
Potassium, mg/L	3.4	1.0
Sodium, mg/L	11	1.0
Nitrite-Nitrogen, mg/L	BQL	0.05
Nitrate-Nitrogen, mg/L	0.14	0.05
Oil & Grease, mg/L	BQL	5
Total Phosphorus, mg/L	0.04	0.02
Lead, mg/L	BQL	0.2
Selenium, mg/L	BQL	0.4
Sulfate, mg/L	2.8	0.5
TKN, mg/L	1.1	0.5
TOC, mg/L	9.7	0.5
Total Solids, mg/L	112	10
Total Suspended Solids, mg/L	12	1
Titanium, mg/L	BQL	0.5
pH, su	6.4	

mg/L = milligram per Liter

BQL = Below Quantitation Limit

su = standard units

Primary Laboratories, Inc.

7423 Lee Davis Road • Mechanicsville, VA 23111 • Telephone (804) 559-9004 • Fax (804) 559-9306

ANALYTICAL LABORATORY REPORT

29-Mar-07

ILUKA Resource, Inc.
Attn: Kevin Rideout
12472 St. John Church Road
Stony Creek, Virginia 23882

Date Received: 22-Mar-07
Date Sampled: 22-Mar-07
Work Order No: 0703207-01
Client ID: **MSP Permit Renewal Sampling-002**

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Time Analyzed	Tech. Initials
BOD	<2.0	2.0	mg/L	405.1	23-Mar-07	15:30	NA
COD	14.0	2.0	mg/L	410.2	29-Mar-07	09:00	NA
TOC	6.31	1.00	mg/L	415.1	29-Mar-07	07:30	PB
TPH-Diesel Range	<1	1	mg/L	3510/8015B (M)	27-Mar-07	14:22	HV
TPH-Gasoline Range	<1	1	mg/L	5030/8015B (M)	22-Mar-07	18:41	HV
T. Phosphorus	0.03	0.01	mg/L	365.2	28-Mar-07	15:00	NA
T. Organic Nitrogen	<1.0	1.0	mg/L	351.3	29-Mar-07	15:30	NA

Date Sampled: 22-Mar-07
Work Order No: 0703207-02
Client ID: **E. Coli - 002**

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Time Analyzed	Tech. Initials
E. Coli	<2.0	2.0	MPN/100ml	SM 9221F	22-Mar-07	16:30	AS

Signature: _____

Parry L. Bragg
Laboratory Manager

Date: _____

3-29-07

These analytical results are based upon materials provided by the client and are intended for the exclusive use of the client. These analytical results represent the best judgement of Primary Laboratories, Inc. Primary Laboratories, Inc. assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report. This report is not to be reproduced except with the written approval of Primary Laboratories, Inc.

APPENDIX 4
RETENTION TIME CALCULATIONS FOR
RETENTION POND B

Flow from the 1 hour / 25 year storm event was calculated using the Rational Method:

$$Q = C \times i \times A$$

Q = Flow (cfs)

C = Runoff Coefficient

i = Inches of rain produced by the 1 hour / 25 year storm event

A = Acres of drainage area

As described in the Virginia Department of Conservation and Recreation's *Virginia Erosion and Sediment Control Handbook*, Third Edition, 1992.

The following values were used in the calculation:

The runoff coefficient (**C**) for the site is estimated to be **0.05**, based on the Land Use classification of Light Industrial.

Rainfall expected from the 1 hour / 25 year storm event (**i**) is approximately **2.75 inches**. This is based on the average of the City of Richmond and Greenville County curve values obtained from the DCR ESC Handbook.

The area (**A**) served by Retention Pond B is approximately **11.85 acres**.

Therefore:

$$\begin{aligned} Q &= 0.05 \times 2.75 \text{ in} \times 11.85 \text{ ac} \\ &= 16.3 \text{ cubic feet per second} \\ &\Rightarrow 978 \text{ cubic feet per minute} \\ &\Rightarrow 7,316 \text{ gallons per minute} \end{aligned}$$

0.5 used
in calc

The volume of Retention Pond B is approximately **1.1 million gallons**.

Therefore, retention time for runoff produced by the 1 hour / 25 year storm is:

$$\begin{aligned} \text{Retention Time} &= 1,100,000 \text{ gallons} \div 7,316 \text{ gallons per minute} \\ &= 150.4 \text{ minutes} \\ &\Rightarrow \mathbf{2.5 \text{ hours}} \end{aligned}$$

Jenkins,Ray

From: Chamberlain,Corwin
Sent: Tuesday, September 04, 2007 11:01 AM
To: Jenkins,Ray
Subject: FW: VPDES information

This is additional info related to the dry site app.

Corwin Chamberlain

Environmental Specialist

Virginia Dept. of Environmental Quality

804-527-5081

Fax 527-5106

-----Original Message-----

From: Allen, John [mailto:John.Allen@iluka.com]
Sent: Tuesday, August 14, 2007 5:40 PM
To: Chamberlain,Corwin
Subject: VPDES information

Corey,

Per your letter dated August 7, 2007, I have compiled the attached information, which is to be incorporated into the renewal package for VPDES permit #VA0090981.

Please contact me if you have any questions regarding this information.

Cheers,

-John A. Allen

Environmental Officer

Iluka Resources Inc

Office: (434)-348-4315

Cell: (804)-943-5611

john.allen@iluka.com

<<MSP_VPDES_Addendum_etal.pdf>>

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10/2/2007

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Please print or type in the unshaded areas only.

Form Approved. OMB No. 2040-0086

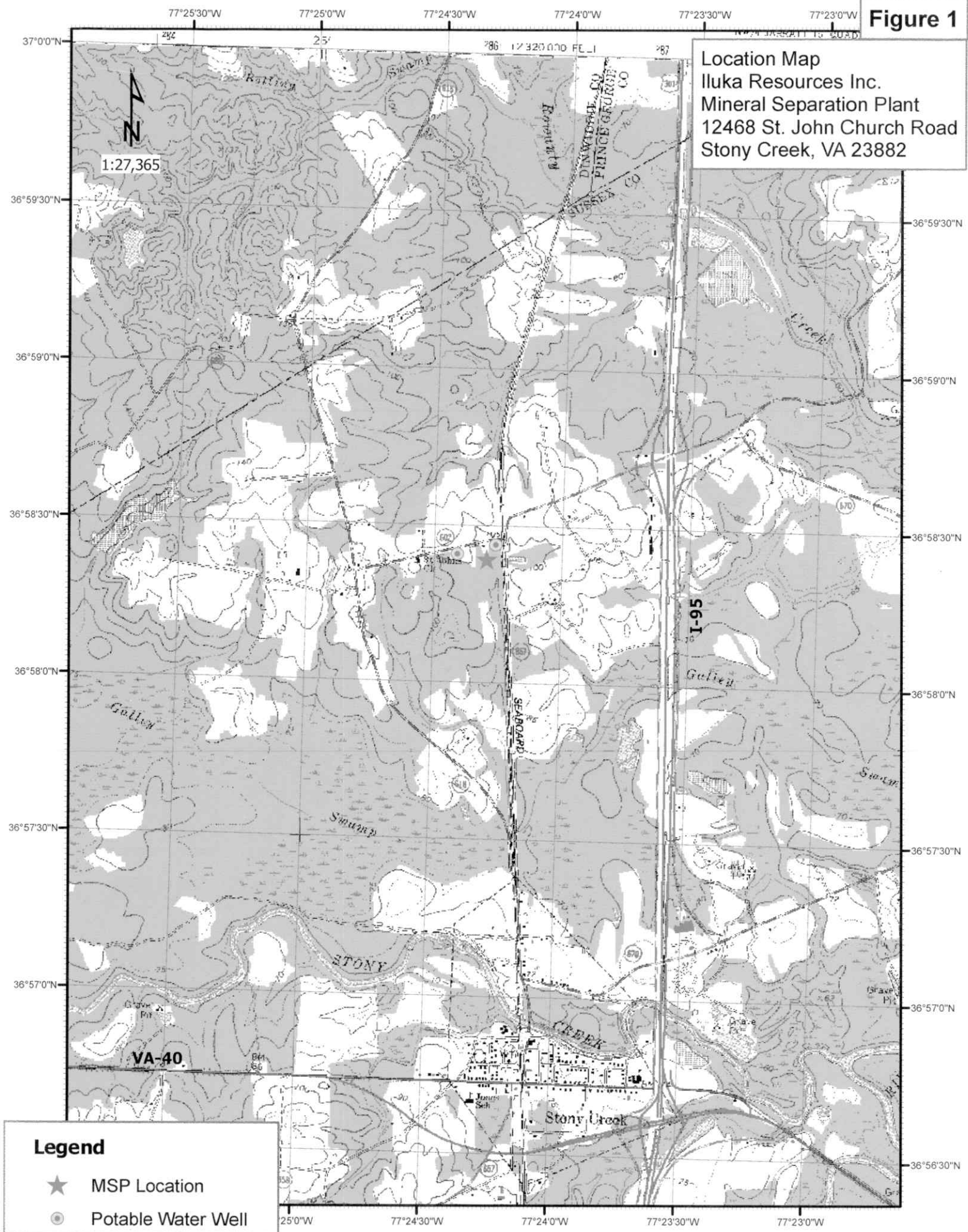
RECEIVED
JUL 01 2007

FORM 1 GENERAL		U.S. ENVIRONMENTAL PROTECTION AGENCY GENERAL INFORMATION Consolidated Permits Program (Read the "General Instructions" before starting.)		I. EPA I.D. NUMBER S F VA0090981 T/A C D 1 2	
LABEL ITEMS		PLEASE PLACE LABEL IN THIS SPACE		GENERAL INSTRUCTIONS If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (the area to the left of the label space lists the information that should appear), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI (except VI-B which must be completed regardless). Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.	
I. EPA I.D. NUMBER					
III. FACILITY NAME					
V. FACILITY MAILING ADDRESS					
VI. FACILITY LOCATION					
II. POLLUTANT CHARACTERISTICS					
INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms .					
SPECIFIC QUESTIONS			SPECIFIC QUESTIONS		
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S. ? (FORM 2A)			B. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S. ? (FORM 2B)		
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)			D. Is this a proposed facility (other than those described in A or B above) which will result in a discharge to waters of the U.S. ? (FORM 2D)		
E. Does or will this facility treat, store, or dispose of hazardous wastes ? (FORM 3)			F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)			H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)			J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		
III. NAME OF FACILITY					
1 SKIP Iluka Resources INC. Mineral Separation Plant (MSP)					
IV. FACILITY CONTACT					
A. NAME & TITLE (last, first, & title)			B. PHONE (area code & no.)		
2 Sale, Allan President			(434) 348-4302		
V. FACILITY MAILING ADDRESS					
A. STREET OR P.O. BOX					
3 12472 St. John Church Rd					
B. CITY OR TOWN					
4 Stony Creek					
C. STATE					
VA					
D. ZIP CODE					
23882					
VI. FACILITY LOCATION					
A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER					
5 12468 St. John Church Rd.					
B. COUNTY NAME					
Sussex					
C. CITY OR TOWN					
6 Stony Creek					
D. STATE					
VA					
E. ZIP CODE					
23882					
F. COUNTY CODE (if known)					
0183					

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)														
A. FIRST										B. SECOND				
C	7	1099	(specify) Miscellaneous Metal Ores, Not Elsewhere Classified. The plant produces zircon and ilmenite sand products from sedimentary ore deposits via gravity and electrostatic separation methods.											
15	16	19												
C. THIRD										D. FOURTH				
C	7	na	(specify) na											
15	16	19												
VIII. OPERATOR INFORMATION														
A. NAME														
C	8	Iluka Resources INC.												
15	16													
B. Is the name listed in Item VIII-A also the owner?														
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO														
C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box: if "Other," specify.)														
F = FEDERAL S = STATE P = PRIVATE M = PUBLIC (other than federal or state) O = OTHER (specify)														
P (specify) Iluka is an Australian mining company based in Perth and traded on the Australian Securities Exchange (ASX). US Operations are represented by the Stony Creek office.														
D. PHONE (area code & no.)														
C	A	(434)	348-4300											
15	16	18	19	21	22									
E. STREET OR P.O. BOX														
12472 St. John Church Rd														
F. CITY OR TOWN														
C	B	Stony Creek												
15	16													
G. STATE										H. ZIP CODE		IX. INDIAN LAND		
VA										23882		Is the facility located on Indian lands?		
												<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		
X. EXISTING ENVIRONMENTAL PERMITS														
A. NPDES (Discharges to Surface Water)										D. PSD (Air Emissions from Proposed Sources)				
C	9	N	VA0090981											
15	16	17	18	30	15	16	17	18	30					
B. UIC (Underground Injection of Fluids)										E. OTHER (specify)				
C	9	U	na											
15	16	17	18	30	15	16	17	18	30	(specify) Virginia new source review permit for stationary minor sources of air emissions.				
C. RCRA (Hazardous Wastes)										E. OTHER (specify)				
C	9	R	na											
15	16	17	18	30	15	16	17	18	30	(specify) VPDDES governing discharges from the MSP's Sediment Pond and the Administration Building's Sediment Pond.				
XI. MAP														
Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements. See Appendix 1, Figures 1 and 2														
XII. NATURE OF BUSINESS (provide a brief description)														
Iluka Resources Inc. is a primary producer of zircon and ilmenite mineral sands. These products are used by various industries engaged in the production of investment castings, porcelain, cosmetics, pigments, and food ingredients. Operations at the Stony Creek Mineral Separation Plant site include: concentrate storage and plant feed, material drying, ilmenite separation, zircon concentrate cleaning, zircon effluent water treatment, product storage and loadout, tailings storage and loading, process and storm water management, equipment fueling and maintenance, and groundwater management.														
XIII. CERTIFICATION (see instructions)														
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.														
A. NAME & OFFICIAL TITLE (type or print)										B. SIGNATURE			C. DATE SIGNED	
Allan R Sale President													7/25/07	
COMMENTS FOR OFFICIAL USE ONLY														
C														
15	16													

Figure 1



Rec'd via email
~~4/10/07~~
8/14/07

VPDES Permit Application Addendum

1. Entity to whom the permit is to be issued:

Iluka Resources Inc.

Who will be legally responsible for the wastewater treatment facilities and compliance with the permit? This may or may not be the facility or property owner.

2. Is this facility located within city or town boundaries? Y / ☒ N

3. What is the tax map parcel number for the land where this facility is located? 48-A-16B

4. For the facility to be covered by this permit, how many acres will be disturbed during the next five years due to new construction activities? 0

5. ALL FACILITIES: What is the design average flow of this facility? 0.072 MGD

Industrial facilities: **What is the max. 30-day avg. production level (include units)?** 29.4 gpm

In addition to the above design flow or production level, should the permit be written with limits for any other discharge flow tiers or production levels? Y / ☒ N

If "Yes", please specify the other flow tiers (in MGD) or production levels:

Please consider: Is your facility's design flow considerably greater than your current flow? Do you plan to expand operations during the next five years?

6. Nature of operations generating wastewater:

Removal of iron and other impurities from the surfaces of the zircon sand product using sulfuric acid

0 % of flow from domestic connections/sources

Number of private residences to be served by the wastewater treatment facilities: ☒ 0 ☐ 1-49 ☐ 50 or more

100 % of flow from non-domestic connections/sources

7. Mode of discharge: ☐ Continuous ☒ Intermittent ☐ Seasonal

Describe frequency and duration of intermittent or seasonal discharges:

Approximately 1 discharge per week, typically less than 24 hours in duration

8. Identify the characteristics of the receiving stream at the point just above the facility's discharge point:

☐ Permanent stream, never dry

☐ Intermittent stream, usually flowing, sometimes dry

☐ Ephemeral stream, wet-weather flow, often dry

☐ Effluent-dependent stream, usually or always dry

☐ Lake or pond at or below the discharge point

☒ Other: Swamp, sometimes dry

9. Approval Date(s):

O & M Manual Sludge/Solids Management Plan 1/27/2003

Have there been any changes in your operations or procedures since the above approval dates? Y / ☒ N

10. What is the average hardness of the effluent that you discharge? 1829 mg/L

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal? <input checked="" type="checkbox"/> YES (complete the following table) <input type="checkbox"/> NO (go to Section III)								
1. OUTFALL NUMBER (list)	2. OPERATION(S) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		b. TOTAL VOLUME (specify with units)		c. DURATION (in days)
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
001	Zircon Finishing Plant Effluent (ZFP) Treatment Plant (ETP)	1 average	8 average	.04234	.05040	42,444 gpd	50,400 gpd	4
III. PRODUCTION								
A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility? <input type="checkbox"/> YES (complete Item III-B) <input checked="" type="checkbox"/> NO (go to Section IV)								
B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)? <input type="checkbox"/> YES (complete Item III-C) <input type="checkbox"/> NO (go to Section IV)								
C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.								
1. AVERAGE DAILY PRODUCTION						2. AFFECTED OUTFALLS (list outfall numbers)		
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)						
na	na	na				na		
IV. IMPROVEMENTS								
A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operations of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions. <input type="checkbox"/> YES (complete the following table) <input checked="" type="checkbox"/> NO (go to Item IV-B)								
1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE				
	a. NO.	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED			
na	na	na	na	na	na			
B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction. <input type="checkbox"/> MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED								

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.
SEE INSTRUCTIONS.

EPA I.D. NUMBER (copy from Item 1 of Form 1)
VA0090981

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)		OUTFALL NO. 001	
--	--	--------------------	--

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.									
1. POLLUTANT	2. EFFLUENT				3. UNITS (specify if blank)			4. INTAKE (optional)	
	a. MAXIMUM DAILY VALUE (1)		b. MAXIMUM 30 DAY VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1)	b. NO. OF ANALYSES
	CONCENTRATION	(2) MASS	CONCENTRATION	(2) MASS				CONCENTRATION	(2) MASS
a. Biochemical Oxygen Demand (BOD)	<3.0				1	mg/L			
b. Chemical Oxygen Demand (COD)	22.1				1	mg/L			
c. Total Organic Carbon (TOC)	5.38				1	mg/L			
d. Total Suspended Solids (TSS)	52.8			19.06	7	mg/L			
e. Ammonia (as N)	0.27			0.115	4	mg/L			
f. Flow	VALUE 35 gpm		VALUE na	29.4 gpm	14			VALUE	
g. Temperature (winter)	VALUE 7.3		VALUE na	na	19	°C		VALUE	
h. Temperature (summer)	VALUE 35.5		VALUE na	na	8	°C		VALUE	
i. pH	MINIMUM 6.15	MAXIMUM 7.06	MINIMUM 6.02	MAXIMUM 8.96	57	STANDARD UNITS			

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

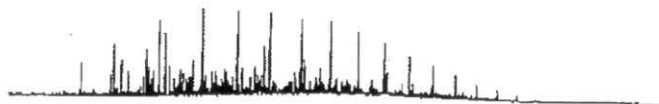
1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT						4. UNITS		5. INTAKE (optional)				
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE		c. LONG TERM AVRG. VALUE			d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(if available) (1) CONCENTRATION	(if available) (2) MASS	(1) VALUE				(2) MASS		
a. Bromide (24959-67-9)		X													
b. Chlorine, Total Residual		X													
c. Color		X													
d. Fecal Coliform	X			2						1	MPN/100mL				
e. Fluoride (16984-48-8)		X													
f. Nitrate-Nitrite (as N)		X									mg/L				

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)		X										
h. Oil and Grease		X										
i. Phosphorus (as P), Total (7723-14-0)		X										
j. Radioactivity												
(1) Alpha, Total	X		6.0 ± 0.7									
(2) Beta, Total	X		21 ± 3									
(3) Radium, Total		X										
(4) Radium 226, Total		X										
k. Sulfate (as SO ₄) (14808-79-8)	X		2635									
l. Sulfide (as S)		X										
m. Sulfite (as SO ₃) (14265-45-3)		X										
n. Surfactants		X										
o. Aluminum, Total (7429-90-5)		X										
p. Barium, Total (7440-39-3)		X										
q. Boron, Total (7440-42-8)		X										
r. Cobalt, Total (7440-48-4)		X										
s. Iron, Total (7439-89-6)	X		0.364									
t. Magnesium, Total (7439-95-4)		X										
u. Molybdenum, Total (7439-98-7)		X										
v. Manganese, Total (7439-96-5)		X										
w. Tin, Total (7440-31-5)		X										
x. Titanium, Total (7440-32-6)		X										

Primary Laboratories, Inc.

2087 Dabney Road • Richmond, VA 23230 • Telephone (804) 213-0831 • Fax (804) 213-0842

**ANALYTICAL LABORATORY REPORT**

04-Sep-03

ILUKA Resource, Inc.
Attn: Chee Saunders
12472 St. John Church
Stony Creek, Virginia 23882

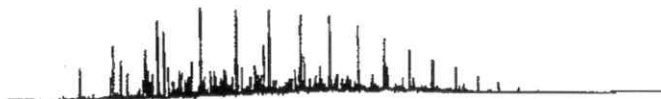
Date Received: 28-Aug-03
Date Sampled: 27-Aug-03
Work Order No: 0308112-01
Client ID: Outfall 001

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Tech. Initials
Nitrate	<0.01	0.01	mg/L	353.3	03-Sep-03	NA
Chloride	17.5	0.1	mg/L	325.3	02-Sep-03	NA
Sulfate	1,775	100	mg/L	375.4	04-Sep-03	NA
Hardness	1,635	1.0	mg/L as CaCO ₃	130.2	02-Sep-03	NA
TSS	4.0	0.5	mg/L	160.2	28-Aug-03	HV
Specific Conductance	2.37	0.2	um/hos	9050	03-Sep-03	CH
pH	8.22	-	pH Units	150.1	28-Aug-03	HV
Dissolved Chrome VI	<0.005	0.005	mg/L	SM3500	28-Aug-03	NA
Ammonia	<0.01	0.01	mg/L	350.3	28-Aug-03	NA
Bicarbonate	14.0	0.1	mg/L as CaCO ₃	SM2320	4-Sep-03	NA

NOTE: pH Temperature at 8.6 Degrees C.

Primary Laboratories, Inc.

2087 Dabney Road • Richmond, VA 23230 • Telephone (804) 213-0831 • Fax (804) 213-0842



ANALYTICAL LABORATORY REPORT

21-Nov-03

ILUKA Resource, Inc.
Attn: Chee Saunders
12472 St. John Church
Stony Creek, Virginia 23882

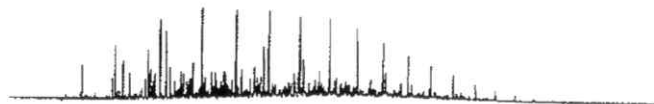
Date Received: 13-Nov-03
Project: P.D. & J Environmental
Date Sampled: 13-Nov-03
Work Order No: 0311079-01
Client ID: Effluent 001

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Tech. Initials
pH	7.40	-	pH Units	150.1	19-Nov-03	HV
TSS	30.0	0.5	mg/L	180.2	20-Nov-03	HV
Chloride	15.3	0.1	mg/L	325.3	17-Nov-03	NA
Specific Conductivity	3230	0.2	umhos/cm	9050	19-Nov-03	CH
Sulfate	2,635	100	mg/L	375.4	18-Nov-03	NA
Hardness	2,471	5.0	mg/L	130.2	19-Nov-03	NA
Ammonia	0.16	0.01	as CaCO ₃ mg/L	350.3	20-Nov-03	NA
Alkalinity	12.3	0.1	mg/L	310.1	17-Nov-03	NA
Dissolved Chrome VI	<0.005	0.005	as CaCO ₃ mg/L	SM3500	14-Nov-03	NA

pH Temperature = 9.8 Degrees C.

Primary Laboratories, Inc.

7423 Lee Davis Road • Mechanicsville, VA 23111 • Telephone (804) 559-9004 • Fax (804) 559-9306



ANALYTICAL LABORATORY REPORT

14-Aug-07

Previously Reported 5/8/07

ILUKA Resource, Inc.
Attn: Kevin Rideout
12472 St. John Church Road
Stony Creek, Virginia 23882

Date Received: 4-May-07
Date Sampled: 3-May-07
Work Order No: 0705038-01
Client ID: MSP Outfall 002

Test Description	Final Result	Reporting Limit	Units of Measure	Standard Methods (18)	Date Analyzed	Time Analyzed	Tech. Initials
TSS	5.4	1.0	mg/L	2540 D	7-May-07	12:00	AS
Hardness	500.1	1.0	mg/L	2340 B	14-Aug-07	13:00	NA

Signature: _____

Parry L. Bragg
Laboratory Manager

Date: _____

8-14-07

These analytical results are based upon materials provided by the client and are intended for the exclusive use of the client. These analytical results represent the best judgement of Primary Laboratories, Inc. Primary Laboratories, Inc. assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report. This report is not to be reproduced except with the written approval of Primary Laboratories, Inc.

Bauer,Jaime

From: Jenkins,Ray
Sent: Monday, October 15, 2007 12:03 PM
To: Bauer,Jaime
Subject: FW: Iluka VPDES renewal

-----Original Message-----

From: Allen, John [mailto:John.Allen@iluka.com]
Sent: Monday, October 15, 2007 11:52 AM
To: Jenkins,Ray
Subject: Iluka VPDES renewal

Good morning Ray,

I asked about the discharge point for sump 3050. It does indeed run to the Effluent Pond. So Figure 4 in Appendix 1 is correct.

I'm still looking over the data on the landscape pages.

Also, attached is a slightly better copy of the site map I sent you on Friday.

Thanks,

John A. Allen

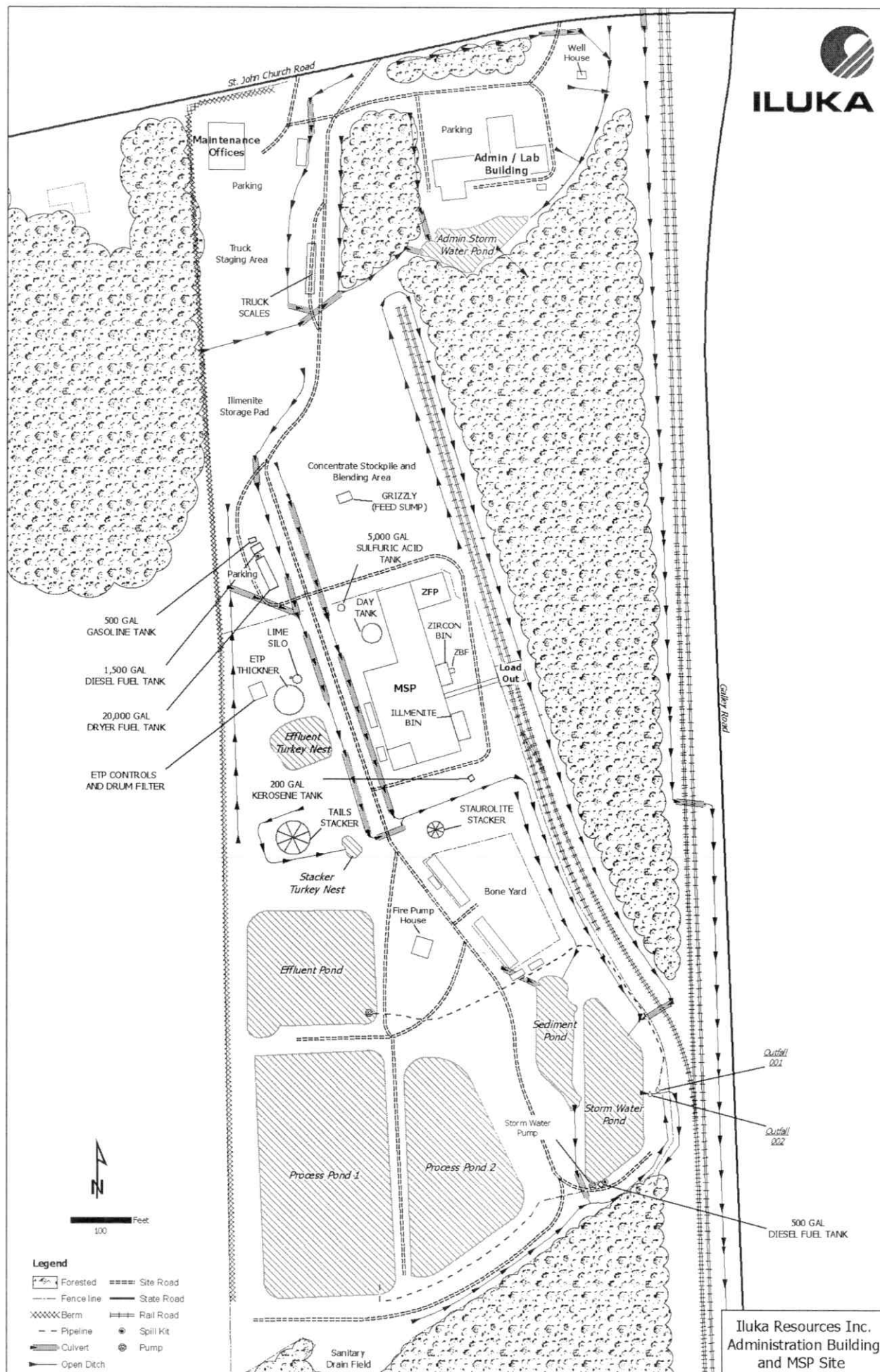
Environmental Officer
Iluka Resources Inc
Office: (434)-348-4315
Cell: (804)-943-5611
john.allen@iluka.com
<<MSP_SWPP.pdf>>

NOTICE - Mail attachments have been compressed automatically and appear as .ZIP files. Should you be unable to access compressed attachments free compression software (e.g FreeZip) is readily available from the Internet.

This message and any attached files may contain information that is confidential and/or subject of legal privileged intended only for use by the intended recipient. If you are not the intended recipient or the person responsible for delivering the message to the intended recipient, be advised that you have received this message in error and that any dissemination, copying or use of this message or attachment is strictly forbidden, as is the disclosure of the information therein. If you have received this message in error please notify the sender immediately and delete the message. All care has been taken to ensure that this message and any attachments are virus free. No responsibility is accepted for any virus infections caused by receipt of this message.



ILUKA





ILUKA

October 29, 2007

Mr. Ray Jenkins
DEQ-PRO
4949 A Cox Road
Glen Allen, VA 23060

RE: Proposed Changes to VPDES Permits VA0090981 and VAR051217

Mr. Jenkins:

Iluka would like to propose the following changes to storm water outfalls from the Mineral Separation Plant (MSP) and Administration / Laboratory Building:

1. that the outfall from the Admin Storm Water Pond be removed from Permit # VAR051217 and added to Permit #VA0090981 as outfall 003,
2. that the berm currently separating Retention Pond 3 (VA0090981 outfall 002) from the Sediment Pond (VAR051217) be removed or breached, and
3. that the Sediment Pond be deepened and its outfall permanently blocked.

These changes would allow all storm water being discharged from the MSP and Administration / Laboratory site to pass through outfalls associated with the site's existing Individual Storm Water Permit #VA0090981, removing the need for the General Permit #VAR051217. A completed Form 2F will be submitted to DEQ for the addition of outfall 003. Please see the enclosed map which shows the proposed modifications to the site.

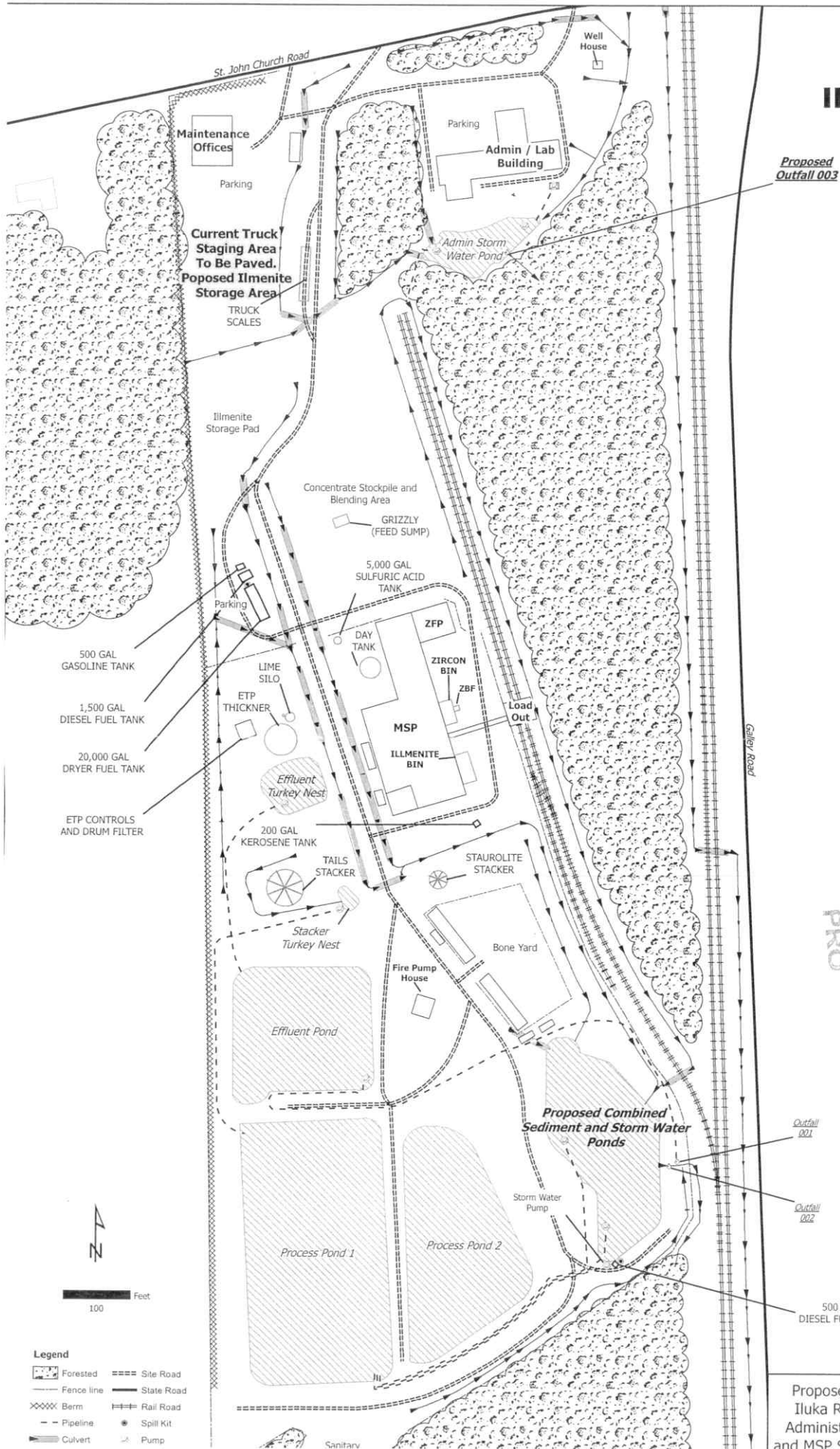
Please contact me if these proposed changes meet with your approval or if you require additional information.

Regards,

John A. Allen
Environmental Officer

Enclosure

Cc: Allan Sale, US Region, General Manager
Shawn Conaway, Technical Manager, Virginia Operations
Jack Rayburn, EHS&T Supervisor, Virginia Operations



RECEIVED
JAN 01 2007
PRO



ILUKA

November 16, 2007

Ms. Jaime Bauer
Environmental Specialist II
DEQ – PRO
4949-A Cox Road
Glen Allen, VA 23060

RE: Form 2F Application to Discharge Storm Water Associated With Industrial Activities

Dear Ms. Bauer

Iluka Resources Inc. hereby submits USEPA Form 3510-2F for the Admin Storm Water Pond. This pond and its outfall are currently permitted under the site's General Storm Water Permit VPDES #VAR051217. Iluka would like to remove this pond and its outfall from Permit #VAR051217 and place it under the site's Individual Permit to Discharge Storm Water Associated with Industrial Activities, VPDES Permit #VA0090981, which is currently open for renewal.

Included with this application is an Appendix containing the following documents:

- Figure 1. Location Map Administration/ Laboratory Building and Mineral Separation Plant Site
- Figure 2. Administration/Laboratory Building and MSP Site Layout and Drainage Areas
- Figure 3. Admin Storm Water Pond Inlets, Discharges and Probable Circulation Patterns
- Document 1: Narrative Description of the Site and Processes
- Retention Time Calculation For Admin Storm Water Pond
- Sampling Results
- Pest Control Agreement and MSDSs
- MSDSs for Chemicals used in the Laboratory

If you have any questions or require clarification on any portion of this application package, please do not hesitate to contact me either in my office at 434-348-4315, on my cell phone at 804-943-5611, or via email at john.allen@iluka.com.

Regards,

John A. Allen
Environmental Officer
Iluka Resources Inc.

RECEIVED
NOV 16 2007
PRO

U.S. Environmental Protection Agency
Washington, DC 20460

**Application for Permit to Discharge Storm Water
Discharges Associated with Industrial Activity**

Approval Expires 5-31-92

FORM
2F
NPDES

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information, or suggestions for improving this form, including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. Outfall Number (list)	B. Latitude			C. Longitude			D. Receiving Water (name)
003	36.00	58.00	25.30	77.00	24.00	16.00	GALLEY SWAMP
							see Fig.1 in the Appendix for location map

II. Improvements

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

1. Identification of Conditions, Agreements, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	number	source of discharge		a. req.	b. proj.
NA	NA	NA	NA	NA	NA

B: You may attach additional sheets describing any additional water pollution (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction.

III. Site Drainage Map

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfalls(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each known past or present areas used for outdoor storage of disposal of significant materials, each existing structural control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; springs, and other surface water bodies which received storm water discharges from the facility.

Please see Figure 2 in the Appendix

Continued from the Front

IV. Narrative Description of Pollutant Sources

A. For each outfall, provide an estimate of the area (include units) of impervious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)	Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)
003	~1.6 ACRES	5.2 ACRES			

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed to minimize contact by these materials with storm water runoff; materials loading and access areas, and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

PLEASE REFER TO DOCUMENT 1 in the Appendix.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
003	Outfall 003 is fed from the Administration/Laboratory Building's Storm Water collection pond (Admin Storm Water Pond) which provides approximately 2.5 hours of retention and settling time for suspended solids during the 1 hr/25 year storm event (see Document 2 in the Appendix for calculation and Figure 3 for a diagram of the pond). Grass lined ditches feed the pond. A submersible pump will be used to mix the pond water to ensure a discharge of relatively consistent quality. Outfall 003 consists of a poured concrete level spreader with weir.	1-U, 1-O

V. Nonstormwater Discharges

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharged from these outfall(s) are identified in either an accompanying Form 2C or Form 2E application for the outfall.

Name and Official Title (type or print) <i>ALAN R. SALE</i> <i>PRESIDENT</i>	Signature <i>ASale</i>	Date Signed <i>11/13/07</i>
--	---------------------------	--------------------------------

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

No process water lines are present within the drainage area served by this outfall. No testing was deemed necessary.

VI. Significant Leaks or Spills

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

NA

Continued from Page 2

EPA ID Number (copy from Item 1 of Form 1)
VA0090981**VII. Discharge Information**

A, B, C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided.
Table VII-A, VII-B, VII-C are included on separate sheets numbers VII-1 and VII-2.

E. Potential discharges not covered by analysis – is any toxic pollutant listed in table 2F-2, 2F-3, or 2F-4, a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☒ Yes (list all such pollutants below)☐ No (go to Section IX)

Titanium, Zirconium*, Oil and Grease.

* Zirconium is a constituent of the zircon sand product produced by the MSP as well as the raw mineral sand concentrate. No testing has been conducted for Zirconium. It is believed absent due to the insolubility of zircon under the conditions present at the site.

VIII. Biological Toxicity Testing Data

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ Yes (list all such pollutants below)☒ No (go to Section IX)**IX. Contract Analysis Information**

Were any of the analyses reported in Item VII performed by a contract laboratory or consulting firm?

☒ Yes (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)☐ No (go to Section X)

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
Primary Laboratories	7423 Lee Davis Road Mechanicsville, VA 23111	804-559-9004	See Sampling Results in the Appendix. The results of TCLP extractions from the mineral sand concentrate, ilmenite and zircon products is also provided in the Appendix for your reference.

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title (Type Or Print)

ALLAN R SALE PRESIDENT

B. Area Code and Phone No.

23882 434-348-4300

C. Signature

ASale

D. Date Signed

11/13/07

Part A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Part B – List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

[illegible]

(1) - Samples were dipped from surface of pond. No storm event or discharge was occurring.
(2) - Values listed for Total Nitrogen are actually TKN, per DEQ instructions.

Continued from the Front

Part C - List each pollutant shown in Table 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

[illegible]

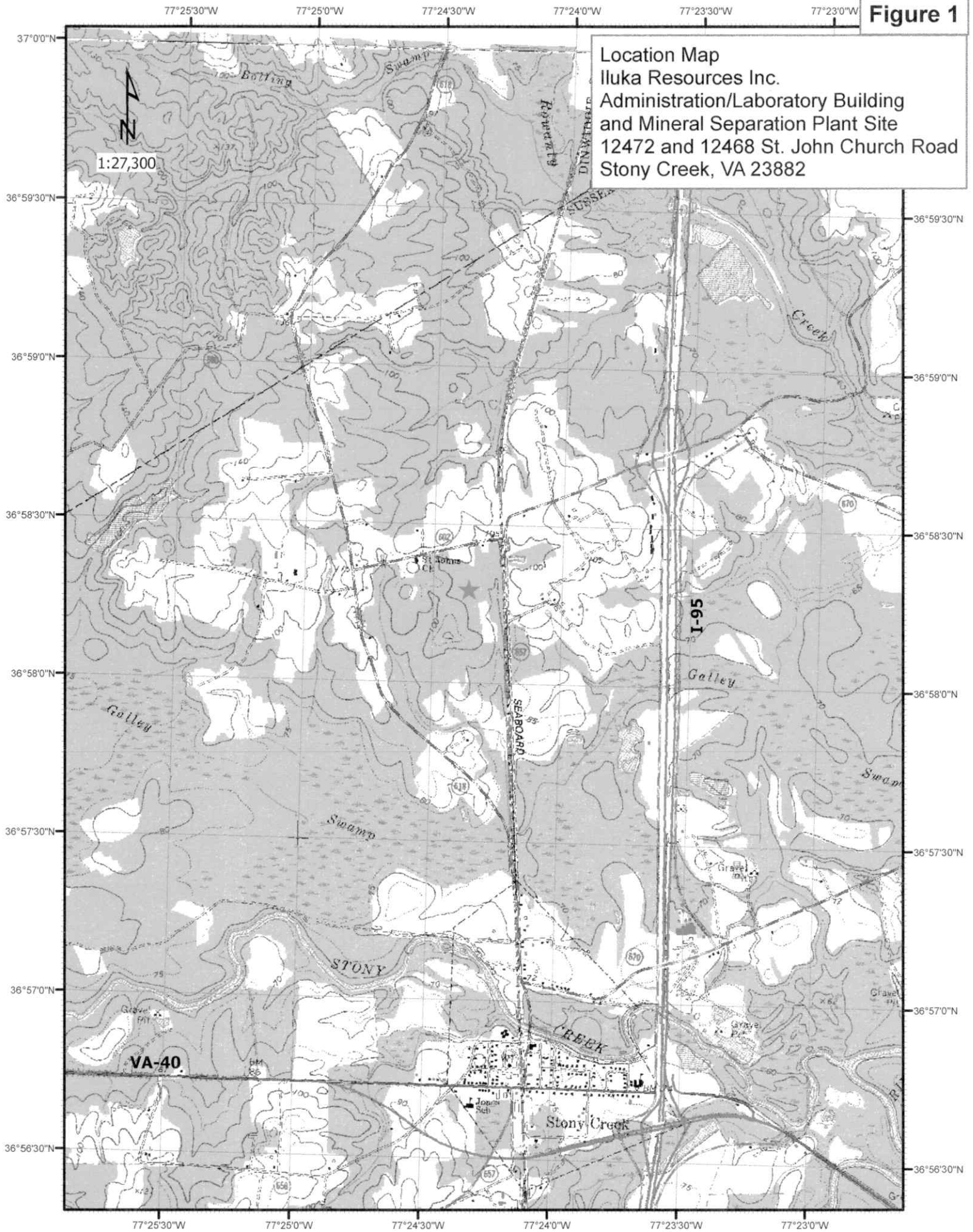
Part D – Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

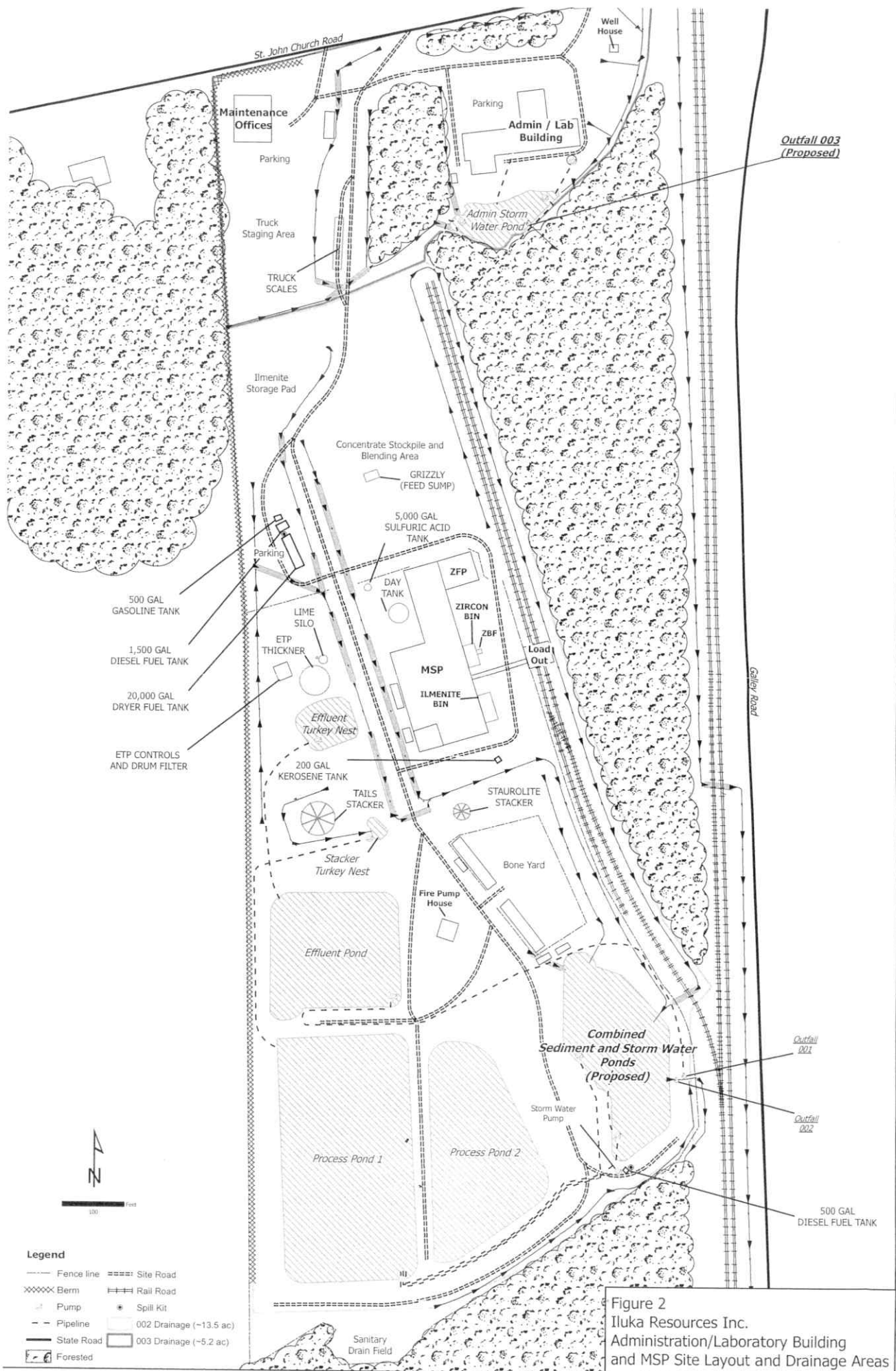
1. Date of Storm Event	2. Duration of Storm Event (in minutes)	3. Total rainfall during storm event (in inches)	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum flow rate during rain event (gallons/minute or specify units)	6. Total flow from rain event (gallons or specify units)
7/15/2005	unknown	unknown	unknown	unknown	unknown
6/3/2005	unknown	unknown	unknown	unknown	unknown
76/2006	unknown	4.80	unknown	unknown	unknown

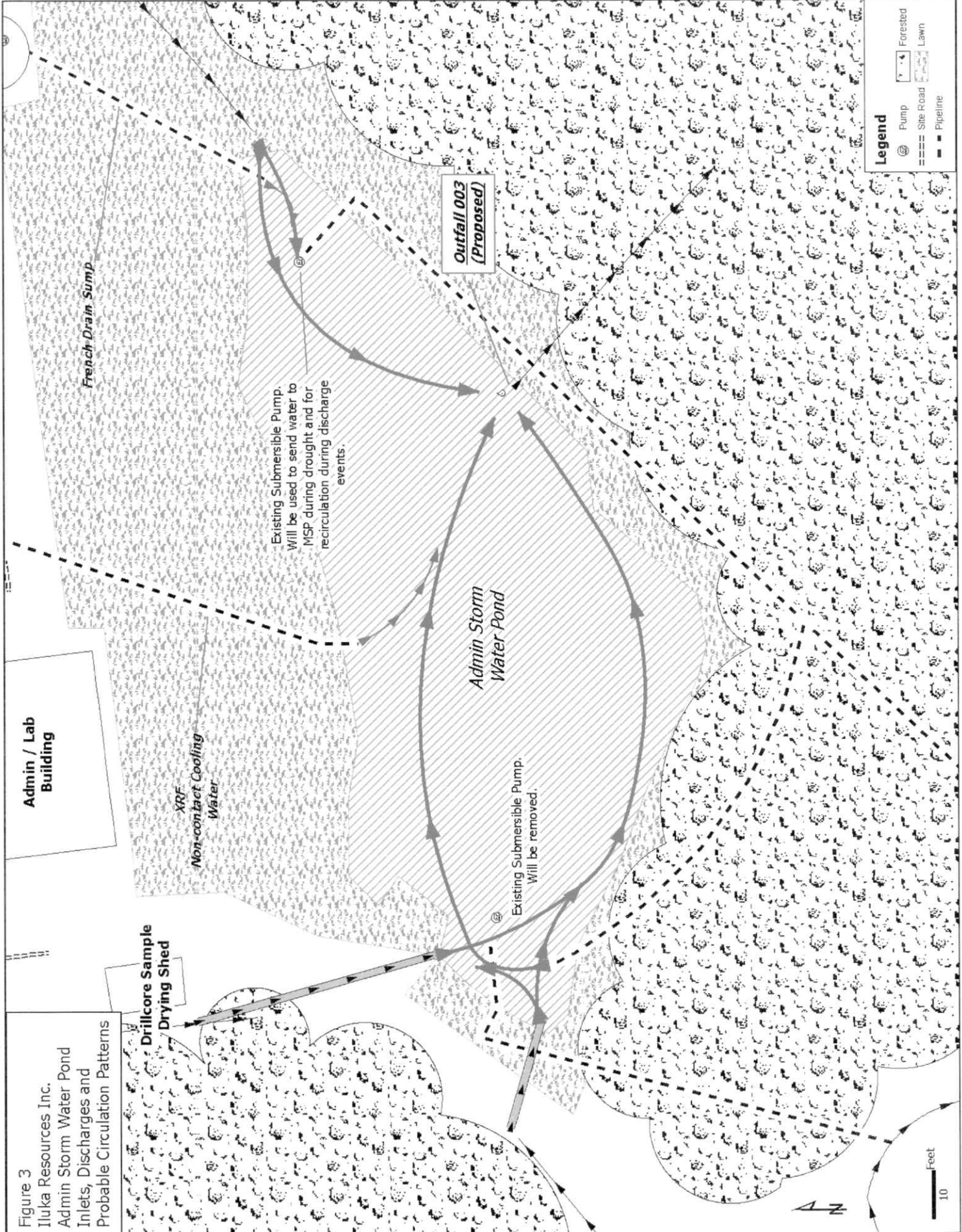
7. Provide a description of the method of flow measurement or estimate.

A hand held electronic flow meter will be used to obtain the velocity of the flow leaving the outfall. This velocity will be multiplied by the depth of the water passing through the outfall to obtain an estimated volume of discharge.

Figure 1







2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

ILUKA RESOURCES INC. 9874
CHEE SAUNDERS
12472 ST. JOHN CHURCH RD.
STONY CREEK, VA 23882-0129

Lab Number: 00-A114303
Sample ID: MINERAL SAND CONCENTRATE
Sample Type: Solid waste
Site ID:

Project:
Project Name: VPDES
Sampler: CHEE SAUNDERS

Date Collected: 8/14/00
Time Collected: 13:45
Date Received: 8/15/00
Time Received: 10:00

TCLP Results

Analyte	Result	Units	Reg Limit	Matrix Spike		Date	Time	Analyst	Method	QC Batch
				Recovery (%)						
Arsenic	< 0.100	mg/l	5.0	106		8/22/00	7:52	G. Robinson	60100	8236
Barium	< 1.00	mg/l	100	113		8/22/00	7:52	G. Robinson	60100	8236
Cadmium	< 0.100	mg/l	1.0	100		8/22/00	7:52	G. Robinson	60100	8236
Chromium	< 0.500	mg/l	5.0	103		8/22/00	7:52	G. Robinson	60100	8236
Lead	< 0.500	mg/l	5.0	98		8/22/00	7:52	G. Robinson	60100	8236
Mercury	< 0.0100	mg/l	0.20	100		8/22/00	7:58	G. McCord	7470A	9068
Selenium	< 0.100	mg/l	1.0	115		8/22/00	7:52	G. Robinson	60100	8236
Silver	< 0.100	mg/l	5.0	105		8/22/00	7:52	G. Robinson	60100	8236
TCLP Extraction	Initiated					8/16/00	17:30	K. Bundy	1311	6948

ND = Not detected at the report limit.

Matrix Spike Recovery for TCLP analytes reported from Batch QC

TCLP preparation follows method 1311, SW-846 Revision 3.

All results reported on a wet weight basis.

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

Laboratory Number: 00-A114303
Sample ID: MINERAL SAND CONCENTRATE

Page 2

These results relate only to the items tested.
This report shall not be reproduced except in full and with
permission of the laboratory.

Report Approved By: J Mitchell

Report Date: 8/22/00

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director

Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 00323

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

ILUKA RESOURCES INC. 7874
CHEE SAUNDERS
12472 ST. JOHN CHURCH RD.
STONY CREEK, VA 23882-0127

Lab Number: 00-A114304
Sample ID: ILMENITE
Sample Type: Solid waste
Site ID:

Project:
Project Name: VPDES
Sampler: CHEE SAUNDERS

Date Collected: 8/14/00
Time Collected: 13:45
Date Received: 8/15/00
Time Received: 10:00

TCLP Results

Analyte	Result	Units	Reg Limit	Matrix Spike		Date	Time	Analyst	Method	QC Batch
				Recovery (%)						
Arsenic	< 0.100	mg/l	5.0	106		8/22/00	7:52	G. Robinson	60100	8236
Barium	< 1.00	mg/l	100	113		8/22/00	7:52	G. Robinson	60100	8236
Cadmium	< 0.100	mg/l	1.0	100		8/22/00	7:52	G. Robinson	60100	8236
Chromium	< 0.500	mg/l	5.0	103		8/22/00	7:52	G. Robinson	60100	8236
Lead	< 0.500	mg/l	5.0	98		8/22/00	7:52	G. Robinson	60100	8236
Mercury	< 0.0100	mg/l	0.20	100		8/22/00	7:58	G. McCord	7470A	9068
Selenium	< 0.100	mg/l	1.0	115		8/22/00	7:52	G. Robinson	60100	8236
Silver	< 0.100	mg/l	5.0	105		8/22/00	7:52	G. Robinson	60100	8236
TCLP Extraction	Initiated					8/16/00	17:30	K. Kundy	1311	6948

ND = Not detected at the report limit.

Matrix Spike Recovery for TCLP analytes reported from Batch QC

TCLP preparation follows method 1311, SW-846 Revision 3.

All results reported on a wet weight basis.

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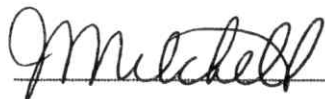
ANALYTICAL REPORT

Laboratory Number: 00-A114304
Sample ID: ILMENITE

Page 2

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permission of the laboratory.

Report Approved By:



Report Date: 8/22/00

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director

Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 00323

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
Fax: 615-726-0954

ANALYTICAL REPORT

ILUKA RESOURCES INC. 9874
CHEE SAUNDERS
12472 ST. JOHN CHURCH RD.
STONY CREEK, VA 23882-0129

Lab Number: 00-A114305
Sample ID: ZIRCON
Sample Type: Solid waste
Site ID:

Project:
Project Name: VPDES
Sampler: CHEE SAUNDERS

Date Collected: 8/14/00
Time Collected: 13:45
Date Received: 8/15/00
Time Received: 10:00

TCLP Results

Analyte	Result	Units	Reg Limit	Matrix Spike		Date	Time	Analyst	Method	QC Batch
				Recovery (%)						
Arsenic	< 0.100	mg/l	5.0	106		8/22/00	7:52	G. Robinson	60100	8236
Barium	< 1.00	mg/l	100	113		8/22/00	7:52	G. Robinson	60100	8236
Cadmium	< 0.100	mg/l	1.0	100		8/22/00	7:52	G. Robinson	60100	8236
Chromium	< 0.500	mg/l	5.0	103		8/22/00	7:52	G. Robinson	60100	8236
Lead	< 0.500	mg/l	5.0	98		8/22/00	7:52	G. Robinson	60100	8236
Mercury	< 0.0100	mg/l	0.20	100		8/22/00	7:58	G. McCord	7470A	9068
Selenium	< 0.100	mg/l	1.0	115		8/22/00	7:52	G. Robinson	60100	8236
Silver	< 0.100	mg/l	5.0	105		8/22/00	7:52	G. Robinson	60100	8236
TCLP Extraction	Initiated					8/16/00	17:30	K. Bundy	1311	6948

ND = Not detected at the report limit.

Matrix Spike Recovery for TCLP analytes reported from Batch QC

TCLP preparation follows method 1311, SW-846 Revision 3.

All results reported on a wet weight basis.

2960 Foster Creighton Dr
Nashville, TN 37204
615-726-0177
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ANALYTICAL REPORT

Laboratory Number: 00-A114303
Sample ID: ZIRCON

Page 2

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permission of the laboratory.

Report Approved By:



Report Date: 8/22/00

Paul E. Lane, Jr., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Serv.
Eric S. Smith, Assistant Technical Director

Gail A. Lage, Technical Serv.
Glenn L. Norton, Technical Serv.
Kelly S. Comstock, Technical Serv.
Pamela A. Langford, Technical Serv.

Laboratory Certification Number: 00323



ILUKA

Document 1: **NARRATIVE DESCRIPTION OF THE SITE AND PROCESSES**

Iluka Resources' Mineral Separation Plant (MSP) and Administration/Laboratory Building is situated on 36.6 acres in Sussex County near the town of Stony Creek (see Figure 1 in the Appendix).

Storm water drainage for 5.4 acres of the site, including the Administration/Laboratory Building, Maintenance Office and associated facilities, is provided by Outfall 003 (see Figure 2 in the Appendix).

1.0 Significant Materials

Significant materials used, proposed for use, or manufactured in the drainage area served by Outfall 003 include the following items:

- Finished mineral sand products (not currently stored in this drainage area)
- Chemicals used in the Laboratory

The Laboratory's chemical supplies are stored either inside the building or in sealed drums inside of secondary containment devices and so are not exposed to storm water. Iluka plans to request to store finished mineral sand products within this drainage area if outfall 003 is approved.

2.0 Methods of Treatment, Storage, and Disposal

2.1 Finished Mineral Sand Products

Iluka plans to seek approval to temporarily store some finished mineral sand product within the drainage area served by the Admin Storm Water Pond if outfall 003 is approved. This stock pile would be exposed to storm water. The pollutant of concern associated with storage of the mineral sand product is the material itself. These minerals are naturally occurring and inert. None of the RCRA metals were observed in the results of Toxicity Characteristic Leaching Procedure (TCLP) testing that was performed on mineral sand concentrate and finished product materials in 2000. The results of this testing can be found in the Sampling Results portion of the Appendix, along with the analytical results of samples taken from the Admin Storm Water Pond as required in Form 2F. Additional analytical results from Benchmark monitoring of the Admin

Storm Water Pond is also included in the Appendix. Table 1 lists some of the properties of the minerals processed by the MSP.

Table 1: Properties of Minerals

Property	Ilmenite	Rutile	Leucoxene	Zircon
Chemical Formula	FeTiO_3	TiO_2	$\text{TiO}_2 + \text{FeTiO}_3$	ZrSiO_4
Specific Gravity	4.75	4.22	3.95	4.69
Magnetic Properties	Conductor Magnetic	Conductor Non-Magnetic	Conductor Weakly Magnetic	Non-Conductor Non-Magnetic

As seen in Table 1, the minerals have relatively high SGs ranging from 3.95 (leucoxene) to 4.75 (ilmenite), as compared to Quartz, which has a SG of 2.65. Therefore, it is unlikely that any stockpiled product would be transported by surface water sheet flow resulting from small storm events. Storm water from the mineral product stockpile area will sheet flow until it intersects one of two unlined drainage channels that are located around the east and south sides of the proposed stockpile area. The drainage channels will convey the storm water east to the Admin Storm Water Pond. In the event of a large storm event, minor amounts of mineral sand product could become available for transport to the Admin Storm Water Pond. If the sand reaches the pond, it will settle out and Iluka will reclaim the valuable material from the drainage channels and/or pond. Transport of mineral sands through outfall 003 from the Admin Storm Water pond is highly unlikely.

2.2 Chemicals in the Laboratory

The Laboratory's chemical supplies are stored either inside the building or in sealed drums inside of secondary containment devices and so are not exposed to storm water. Waste chemicals from the Lab are stored in sealed drums inside of secondary containment devices and so are not exposed to storm water. These wastes are regularly collected by Safety Kleen for offsite disposal and/or recycling. Spill kits containing a variety of absorbent materials are stationed in the Laboratory. Copies of the MSDSs for all chemicals used in the Lab are included in the Appendix.

3.0 Past and Present Management Practices

Iluka has prepared a combined Storm Water Pollution Prevention and SPCC Plan to document procedures used to minimize the contact of materials with storm water runoff. This document is currently being updated. A copy of the SWPP/SPCC Plan is available for inspection in the Environmental, Health and Safety Office at the Administration/Laboratory Building. As mentioned in the above section, chemicals are primarily stored in within the Laboratory or in sealed drums within secondary containment devices. When this is not possible, the chemicals are stored in sealed containers and placed on paved surfaces in designated areas.

4.0 Pesticide and Herbicide Use

Herbicides are not generally used at the site. A monthly service is used to control insects and rodents in the MSP and Administration/Laboratory Building. A copy of the pest control agreement and MSDS sheets for the chemicals used on-site are included in the Appendix.

RETENTION TIME CALCULATION FOR ADMIN STORM WATER POND

Flow from the 1 hour / 25 year storm event was calculated using the Rational Method:

$$Q = C \times i \times A$$

Q = Flow (cfs)

C = Runoff Coefficient

i = Inches of rain produced by the 1 hour / 25 year storm event

A = Acres of drainage area

As described in the Virginia Department of Conservation and Recreation's *Virginia Erosion and Sediment Control Handbook*, Third Edition, 1992.

The following values were used in the calculation:

The runoff coefficient (**C**) for the site was estimated by weighted average as shown below.

Land Use	Area (acres)		Runoff Coefficient (C)		Weighted C
Flat, clay soil lawn	0.2	X	0.15	=	0.03
Sandy, flat lawn	0.5	X	0.05	=	0.025
Asphalt	1.2	X	0.70	=	0.84
Gravel lot	1.7	X	0.40	=	0.68
Metal Roof	0.4	X	1.00	=	0.40
Woodland	1.0	X	0.10	=	0.10
Totals	5.0				2.08

Based on this, the weighted average runoff coefficient for the site is calculated to be:

$$C = 2.08 / 5.0 = 0.42$$

Rainfall expected from the 1 hour / 25 year storm event (**i**) is approximately **2.75 inches**. This is based on the average of the City of Richmond and Greensville County curve values obtained from the DCR ESC Handbook.

The area (**A**) served by the Admin Storm Water Pond is approximately **5.2 acres** (including the pond itself).

Therefore:

$$\begin{aligned} Q &= 0.42 \times 2.75 \text{ in} \times 5.2 \text{ ac} \\ &= 6.0 \text{ cubic feet per second} \\ &\Rightarrow 2,700 \text{ gallons per minute} \end{aligned}$$

The volume of Retention Pond B is approximately **0.4 million gallons**.

Therefore, retention time for runoff produced by the 1 hour / 25 year storm is:

$$\begin{aligned} \text{Retention Time} &= 400,000 \text{ gallons} \div 2,700 \text{ gallons per minute} \\ &= 148 \text{ minutes} \\ &\Rightarrow \sim \mathbf{2.5 \text{ hours}} \end{aligned}$$

SAMPLING RESULTS

Primary Laboratories, Inc.
Results

14-Jun-05

Date Sampled: 03-Jun-05

Work Order No: 0506030-02

Client ID: Admin. Stormwater Pond (1), (2)

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Tech. Initials
TSS	13.0	1.0	mg/L	160.2	10-Jun-05 at 9:30	MS
pH	6.57	-	pH Units	150.1	10-Jun-05 at 11:00	MS
Turbidity	10.5	-	NTU	Nephelometric	6-Jun-05 at 14:10	HV
Hardness	50.0	1.0	mg/L as CaCO ₃	130.2	6-Jun-05 at 8:30	NA

Primary Laboratories, Inc.
Results

14-Jun-05

Date Sampled: 03-Jun-05
Work Order No: 0506030-02
Client ID: Admin. Stormwater Pond (1), (2)

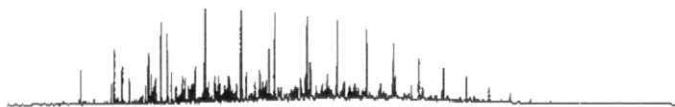
Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Tech. Initials
Total Metals						
Antimony	<0.100	0.100	mg/L	200.2/200.7	10-Jun-05 at 10:58	HV
Arsenic	0.014	0.005	mg/L	200.2/206.2	9-Jun-05 at 15:30	HV
Beryllium	<0.010	0.010	mg/L	200.2/200.7	10-Jun-05 at 10:58	HV
Cadmium	0.016	0.010	mg/L	200.2/200.7	9-Jun-05 at 13:56	HV
Copper	0.367	0.020	mg/L	200.2/200.7	10-Jun-05 at 10:58	HV
Iron	13.1	0.050	mg/L	200.2/200.7	10-Jun-05 at 10:58	HV
Lead	0.026	0.005	mg/L	200.2/239.2	7-Jun-05 at 15:00	HV
Manganese	0.294	0.020	mg/L	200.2/220.7	10-Jun-05 at 10:58	HV
Mercury	<0.0002	0.0002	mg/L	245.1	7-Jun-05 at 14:25	HV
Nickel	0.033	0.020	mg/L	200.2/200.7	9-Jun-05 at 13:56	HV
Selenium	<0.005	0.005	mg/L	200.2/270.2	6-Jun-05 at 12:41	HV
Silver	<0.001	0.001	mg/L	200.2/272.2	9-Jun-05 at 12:00	HV
Zinc	1.45	0.010	mg/L	200.2/200.7	10-Jun-05 at 10:58	HV

Signature:  Date: 6/15/05
Parry L. Bragg
Laboratory Manager

These analytical results are based upon materials provided by the client and are intended for the exclusive use of the client. These analytical results represent the best judgement of Primary Laboratories, Inc. Primary Laboratories, Inc. assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report. This report is not to be reproduced except with the written approval of Primary Laboratories, Inc.

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ANALYTICAL LABORATORY REPORT

26-Jul-05

ILUKA Resource, Inc.
Attn: Kevin Rideout
12472 St. John Church
Stony Creek, Virginia 23882

Date Received: 15-Jul-05
Date Sampled: 15-Jul-05
Work Order No: 0507097-01
Client ID: **Admin. Stormwater # 1 Grab**

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Tech. Initials
TSS	27.6	1.0	mg/L	160.2	22-Jul-05 at 10:00	MS
pH	6.89	-	pH Units	150.1	22-Jul-05 at 11:17	MS
Turbidity	<1.0	1.0	NTU	Nephelometric	19-Jul-05	HV

pH Temperature = 20.6 Degrees C.

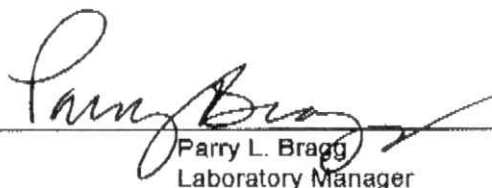
Primary Laboratories, Inc. Results

26-Jul-05

Date Sampled: 15-Jul-05
 Work Order No: 0507087-02
 Client ID: Admin. Stormwater # 2

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Tech. Initials
Hardness	27.1	0.1	mg/L as CaCO ₃	130.2	21-Jul-05 at 8:30	NA
Metals						
Antimony	<0.100	0.100	mg/L	200.2/200.7	18-Jul-05 at 13:32	HV
Arsenic	<0.005	0.005	mg/L	200.2/206.2	20-Jul-05 at 14:45	HV
Beryllium	<0.010	0.010	mg/L	200.2/200.7	18-Jul-05 at 13:32	HV
Cadmium	<0.010	0.010	mg/L	200.2/200.7	18-Jul-05 at 13:32	HV
Copper	0.028	0.020	mg/L	200.2/200.7	18-Jul-05 at 13:32	HV
Iron	1.26	0.050	mg/L	200.2/200.7	18-Jul-05 at 13:32	HV
Lead	<0.005	0.005	mg/L	200.2/239.2	19-Jul-05 at 14:15	HV
Manganese	0.082	0.020	mg/L	200.2/200.7	18-Jul-05 at 13:32	HV
Mercury	<0.0002	0.0002	mg/L	245.1	20-Jul-05 at 15:35	HV
Nickel	<0.020	0.020	mg/L	200.2/200.7	18-Jul-05 at 13:32	HV
Selenium	<0.005	0.005	mg/L	200.2/270.2	20-Jul-05 at 15:25	HV
Silver	<0.001	0.001	mg/L	200.2/272.2	21-Jul-05 at 9:45	HV
Zinc	0.021	0.010	mg/L	200.2/200.7	18-Jul-05 at 13:32	HV

Signature: _____



Parry L. Bragg
Laboratory Manager

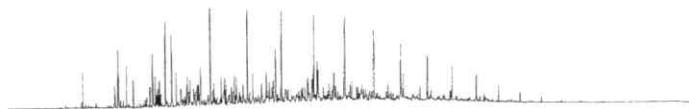
Date: _____

7/26/05

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ANALYTICAL LABORATORY REPORT

21-Jul-06

ILUKA Resource, Inc.
Attn: Kevin Rideout
12472 St. John Church
Stony Creek, Virginia 23882

Date Received: 07-Jul-06
Date Sampled: 06-Jul-06
Work Order No: 0607026-01
Client ID: **Admin Storm #1**

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Tech. Initials
TSS	30	1	mg/L	160.2	11-Jul-06 at 13:30	MS
pH	5.50	-	pH Units	150.1	12-Jul-06	MS
Temp for pH	8.4	-	Degree C		12-Jul-06 at 10:05	MS
Turbidity	7.8	-	NTU	Nephelometric/180.1	14-Jul-06 at 14:05	AB

Date Sampled: 06-Jul-06
Work Order No: 0607026-03
Client ID: **Concord Storm Water Outfall S001 #1**

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Tech. Initials
TSS	89.2	1.0	mg/L	160.2	11-Jul-06 at 13:30	MS
pH	5.67	-	pH Units	150.1	12-Jul-06	MS
Temp for pH	9.2	-	Degree C		12-Jul-06 at 10:10	MS
Turbidity	41.5	-	NTU	Nephelometric/180.1	14-Jul-06 at 14:05	AB

Primary Laboratories, Inc.
Results

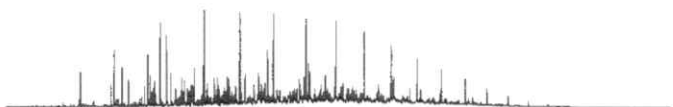
21-Jul-06

Date Sampled: 06-Jul-06
Work Order No: 0607026-02
Client ID: Admin Storm #2

Test Description	Final Result	Reporting Limit	Units of Measure	EPA Test Method	Date Analyzed	Tech. Initials
Hardness	21.1	0.1	mg/L as CaCO ₃	130.2	14-Jul-06 at 14:00	NA
Metals						
Antimony	<0.100	0.100	mg/L	200.2/200.7	17-Jul-06 at 11:50	AB
Arsenic	<0.005	0.005	mg/L	200.2/206.2	20-Jul-06 at 11:54	AB
Beryllium	<0.010	0.010	mg/L	200.2/200.7	17-Jul-06 at 11:50	AB
Cadmium	<0.010	0.010	mg/L	200.2/200.7	17-Jul-06 at 11:50	AB
Copper	0.066	0.020	mg/L	200.2/200.7	17-Jul-06 at 11:50	AB
Iron	2.07	0.050	mg/L	200.2/200.7	17-Jul-06 at 11:50	AB
Lead	<0.005	0.005	mg/L	200.2/239.2	17-Jul-06 at 11:50	AB
Manganese	0.061	0.020	mg/L	200.2/200.7	17-Jul-06 at 11:50	AB
Mercury	<0.0002	0.0002	mg/L	245.1	14-Jul-06 at 14:48	AB
Nickel	<0.020	0.020	mg/L	200.2/200.7	17-Jul-06 at 11:50	AB
Selenium	0.008	0.005	mg/L	200.2/270.2	19-Jul-06 at 14:06	AB
Silver	<0.001	0.001	mg/L	200.2/272.2	17-Jul-06 at 15:07	AB
Zinc	0.047	0.010	mg/L	200.2/200.7	17-Jul-06 at 11:50	AB

Primary Laboratories, Inc.

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ANALYTICAL LABORATORY REPORT

31-Oct-07

Iluka Resources, Inc
Attn: Kevin Rideout
12472 St Johns Church Road
Stoney Creek, VA 23882

Project: MSP Outfall 003
Date Received: 23-Oct-07
Date Sampled: 23-Oct-07
Work Order No: 0710198-01
Client ID: **Outfall 003**

Test Description	Final Result	Reporting Limit	Units of Measure	Standard Methods (18)	Date Analyzed	Time Analyzed	Tech. Initials
O&G	<0.9	0.9	mg/L	5520 B	30-Oct-07	9:30	AS
BOD	3.6	2.0	mg/L	5210 B	24-Oct-07	7:45	NA
COD	17.0	2.0	mg/L	5220C	30-Oct-07	12:00	NA
TSS	17.8	1.0	mg/L	2540 D	29-Oct-07	8:30	AS
TKN	<1.0	1.0	mg/L	4500 N/NH ₃	24-Oct-07	15:00	NA
pH	8.12	-	pH Units	4500H ⁺ B	31-Oct-07	11:30	HV
Total Phosphorus	0.07	0.01	mg/L	4500P E	28-Oct-07	10:00	NA
Alkalinity	86.5	0.1	mg/L as CaCO ₃	2320 B	24-Oct-07	15:30	NA
Ammonia	0.02	0.01	mg/L	4500NH ₃ F	24-Oct-07	8:00	NA
TOC	<1.00	1.00	mg/L	5310 C	29-Oct-07	7:30	PB
Nitrate	0.04	0.01	mg/L	4500 NO ₃ ⁻ E	26-Oct-07	13:00	NA
Nitrite	<0.005	0.005	mg/L	4500 NO ₂ ⁻ B	25-Oct-07	12:00	NA
Sulfate	12.3	2.0	mg/L	4500SO ₄ ²⁻ E	29-Oct-07	14:00	NA

Primary Laboratories, Inc.
Results

31-Oct-07

Project: MSP Outfall 003
Date Received: 23-Oct-07
Date Sampled: 23-Oct-07
Work Order No: 0710198-01
Client ID: Outfall 003

Test Description	Final Result	Reporting Limit	Units of Measure	Standard Methods (18)	Date Analyzed	Time Analyzed	Tech. Initials
Metals							
Arsenic	<0.050	0.050	mg/L	3030E/3120B	29-Oct-07	14:02	HV
Barium	0.065	0.020	mg/L	3030E/3120B	29-Oct-07	14:02	HV
Chromium	<0.020	0.020	mg/L	3030E/3120B	29-Oct-07	14:02	HV
Iron	0.926	0.050	mg/L	3030E/3120B	29-Oct-07	14:02	HV
Lead	<0.050	0.050	mg/L	3030E/3120B	29-Oct-07	14:02	HV
Mercury	<0.0002	0.0002	mg/L	3112 B	25-Oct-07	12:52	HV
Potassium	6.00	1.00	mg/L	3030E/3120B	29-Oct-07	14:02	HV
Selenium	<0.050	0.050	mg/L	3030E/3120B	29-Oct-07	14:02	HV
Silver	<0.020	0.02	mg/L	3030E/3120B	29-Oct-07	14:02	HV
Sodium	37.5	5.0	mg/L	3030E/3120B	29-Oct-07	14:02	HV
Titanium	<0.020	0.020	mg/L	3030E/3120B	29-Oct-07	14:02	HV

Note: Samples received in laboratory on ice.

Signature: _____

Parry L. Bragg

Laboratory Manager

Date: _____

10/31/07

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AND MSDS SHEETS

PRODUCT 129

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Pest Control Service Agreement

HOUCHINS PEST CONTROL, INC.

 2775 County Drive
 PETERSBURG, VA 23803
 (804) 732-2930 Fax (804) 732-6842

1077

CUSTOMER Iluka Resources, Inc.		SERVICE LOCATION	
STREET 12472 St. Johns Church Road			
CITY, STATE and ZIP Stony Creek, VA 23882		PERSON TO BE CONTACTED	SERVICE PHONE
PHONE 434-246-8016	TYPE OF PROPERTY TO BE SERVICED		
DATE SERVICE BEGINS	EXPIRATION DATE	RENEWAL <input type="checkbox"/>	SERVICE TO BE PERFORMED <input checked="" type="checkbox"/> MONTHLY <input type="checkbox"/> QUARTERLY <input type="checkbox"/> OTHER

PESTS TO BE CONTROLLED:

Roaches, ants, spiders and rodents

SPECIAL INSTRUCTIONS:

Treat hallways, restrooms, breakrooms and offices; spray outside perimeter of blue building and both trailers. Use bait and glueboards for control of rodents.

Termites and clovermites are not included in this contract.

TERMS AND CONDITIONS:

SERVICE GUARANTEE: We agree to apply chemicals to control above-named pests in accordance with terms and conditions of this Service Agreement. All labor and materials will be furnished to provide the most efficient pest control and maximum safety required by federal, state and city regulations.

SERVICE RENEWAL: This agreement shall be for an initial period of one year, and will renew itself annually unless either party cancels this agreement by giving thirty days written notice before any expiration date.

ANNUAL AGREEMENT CHARGE \$ _____

INITIAL SERVICE CHARGE \$ _____

MONTHLY/QUARTERLY PAYMENTS \$ 150.00

_____ \$ _____

BY G. L. Houchins DATE 10/2/06
 COMPANY (AUTHORIZED SIGNATURE)

FOR CUSTOMER _____ DATE _____
 (AUTHORIZED SIGNATURE)

CONTRAC®

MSDS

Date of Issue:
FEBRUARY 1995

MANUFACTURER'S ADDRESS: BELL LABORATORIES, INC. 3699 KINSMAN BLVD., MADISON WI 53704		PREPARED BY: VJD/CAR	TELEPHONE NO.: (608) 241-0202	EMERGENCY PHONE NO.: Contact your local Poison Control Center
PRODUCT NAME: CONTRAC®		CAS NO.: 28772-56-7		
CHEMICAL FAMILY: Coumarin		CHEMICAL NAME & SYNONYMS: 3-[3-(4'-Bromo-[1,1'-biphenyl]-4-yl)-3-hydroxy-1-phenylpropyl]- 4-hydroxy-2H-1-benzopyran-2-one		
CHEMICAL FORMULA: C ₃₀ H ₂₅ BrO ₄		TRADE NAME & SYNONYMS: Bromadiolone		
SECTION I. HAZARDOUS INGREDIENTS				
ACTIVE INGREDIENTS: Bromadiolone			% 0.005	CURRENT TLV 500 mg/kg based on beagle dog
SECTION II. PHYSICAL DATA OF ACTIVE INGREDIENT				
APPEARANCE & ODOR: White odorless powder	MOLECULAR WEIGHT: 527.4	MELT POINT: 200-210°C	SPECIFIC GRAVITY: NA	
VAPOR DENSITY (AIR=1): NA	COLOR: White	BULK DENSITY: 0.33 gm/cc	BOILING POINT: NA	
VAPOR PRESSURE: NA	SOLUBILITY: 12 mg/l (water)	WATER REACTIVE: NA	EVAPORATION RATE: NA	
SECTION III. FIRE & EXPLOSION DATA OF PRODUCT				
FLASH POINT F (METHOD USED): NA		FLAMMABLE LIMIT: NA	AUTOIGNITION TEMP: NA	
EXTINGUISHING MEDIA: Extinguish with water, foam or inert gas.				
SPECIAL FIRE FIGHTING PROCEDURES: None				
UNUSUAL FIRE OR EXPLOSION HAZARDS: None				
SECTION IV. REACTIVITY HAZARD DATA OF ACTIVE INGREDIENT				
STABILITY: Stable	CONDITIONS TO AVOID: NA			
POLYMERIZATION: Will not occur.	CONDITIONS TO AVOID: NA			
INCOMPATIBILITY (MATERIALS TO AVOID): Strong Bases		HAZARDOUS DECOMPOSITION PRODUCTS: Carbon Monoxide / Carbon Dioxide		
SECTION V. TOXICITY DATA				
LD50, ORAL (INGESTION) (Tech): 1.125 mg/kg [Rat] 1.75 mg/kg [Mouse]	LD50, DERMAL (SKIN CONTACT): (1% AIT) 650 mg/kg [Rabbit]	INHALATION- LC50 (1% AIT) 9.23 mg/l x 1 hr [Rat]		
FISH LC 50: 1.4 mg/l [Rainbow Trout] 3.0 mg/l [Bluegill sunfish]	SKIN AND EYE IRRITATION: (1% AIT) Non-irritating	LD50, ORAL: (TECH) 10 mg/kg [Dog]		
SECTION VI. HEALTH HAZARD DATA OF PRODUCT				
PRIMARY ROUTE OF ENTRY: <input checked="" type="checkbox"/> Ingestion <input type="checkbox"/> Skin & Eye contact <input type="checkbox"/> Inhalation <input type="checkbox"/> Skin absorption		MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: None		SIGNAL WORD: Caution
HEALTH HAZARDS: 1- Caution: May be irritating.		SIGNS & SYMPTOMS OF EXPOSURE: May reduce clotting ability of the blood and cause bleeding.		
EMERGENCY FIRST AID PROCEDURES: Eyes: Flush with plenty of water. Skin: Wash with soap & water. Inhalation: None. Ingestion: Administer Vitamin K 1 intramuscularly or orally as indicated in bishydroxycoumarin overdoses. Repeat as necessary based on monitoring of prothrombin times.				
SPECIAL PROTECTION INFORMATION: None				
SECTION VII. CONTROL & PROTECTIVE MEASURES OF PRODUCT				
RESPIRATOR TYPE: None		GLOVES: Rubber gloves		
EYE PROTECTION: None		VENTILATION: None		
OTHER PROTECTIVE MEASURES: None				
SECTION VIII. SPILL OR LEAK PROCEDURE OF PRODUCT				
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: General clean-up.				
WASTE DISPOSAL METHOD: Product that cannot be used according to label instructions, must be disposed of according to applicable Federal, State or Local procedures.				
SECTION IX. SPECIAL PRECAUTIONS & STORAGE DATA OF PRODUCT				
STORAGE TEMPERATURE: Room temperature		AVERAGE SHELF LIFE: Bait is stable for a minimum of 1 year when stored properly.		
SPECIAL SENSITIVITY (HEAT, LIGHT, MOISTURE): Avoid exposure to light and humidity.				
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Avoid lakes, streams or ponds.				
SECTION X. SHIPPING DATA OF PRODUCT				
D.O.T. SHIPPING NAME: Contrag		TECHNICAL SHIPPING NAME: Rodenticide containing Bromadiolone.		
D.O.T. HAZARD CLASSIFICATION: Non-hazardous				
D.O.T. LABELS REQUIRED: None		FREIGHT CLASSIFICATION: Class 60		
WARRANTY: The information provided in this Material Safety Data Sheet has been obtained from sources believed to be reliable. Bell Labs provides no warranties, either expressed or implied and assumes no responsibility for the accuracy or completeness of the data contained herein. This information is offered for your consideration and investigation. You should satisfy yourself that you have all current data relevant to your particular use.				



Bayer CropScience

MATERIAL SAFETY DATA SHEET

BAYER CROP SCIENCE

P.O. Box 4913 Hawthorn Road
Kansas City, MO 64120-0013

TRANSPORTATION EMERGENCY

CALL CHEMTREC: 800-424-9300
INTERNATIONAL: 703-527-3887

NON-TRANSPORTATION

BAYER EMERGENCY PHONE...: (800) 414-0244
BAYER INFORMATION PHONE.: (800) 842-8020

1. CHEMICAL PRODUCT IDENTIFICATION:

PRODUCT NAME.....: TEMPO SC Ultra Premise Spray
PRODUCT CODE.....: 21648
CHEMICAL FAMILY.....: Pyrethroid Insecticide
CHEMICAL NAME.....: Cyano(4-fluoro-3-phenoxyphenyl)methyl 3-(2,2
-dichloroethenyl)-2,2-dimethylcyclopropanecarboxylate
SYNONYMS.....: beta-cyfluthrin
FORMULA.....: C22 H18 Cl2 F N O3

2. COMPOSITION/INFORMATION ON INGREDIENTS:

INGREDIENT NAME

/CAS NUMBER

EXPOSURE LIMITS

CONCENTRATION (%)

***** HAZARDOUS INGREDIENTS *****

FCR 4545 Technical (beta-cyfluthrin)

68359-37-5 OSHA : Not Established

11.8 %

ACGIH: Not Established

Specific chemical identity is withheld as a trade secret.

OSHA : Not Established

1-3 %

ACGIH: Not Established

Product Code: 21648

Approval date: 05/06/2002

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3. HAZARDS IDENTIFICATION:

 * EMERGENCY OVERVIEW *
 *
 * CAUTION! Color: Beige; Form: Liquid; Off-white to beige *
 * viscous liquid suspension; Odor: Chalky; Harmful if *
 * inhaled; Harmful if absorbed through skin; Causes eye *
 * irritation. *

POTENTIAL HEALTH EFFECTS:

ROUTE(S) OF ENTRY.....: Inhalation; Skin Contact; Skin Absorption;
 Eye Contact

HUMAN EFFECTS AND SYMPTOMS OF OVEREXPOSURE:

ACUTE EFFECTS OF EXPOSURE.....: Skin and mucous membrane irritation may occur from contact with the product and produce symptoms such as itching, stinging, skin reddening or rash. Paresthesia (a tingling or burning sensation on the surface of the skin) may also result from skin contact. These are frequently reported symptoms associated with sufficient dermal exposure to alpha-cyano (Type II) synthetic pyrethroids and normally subside without treatment within 24 hours. The onset of these symptoms usually occurs 2-12 hours after exposure. The effects are temporary and are reversible. Based on the EPA Toxicity Category criteria, this material is mildly toxic by the oral and dermal routes of exposure. In addition, animal studies have shown that it can cause mild irritation to the conjunctiva of the eye with all irritation resolving within 7 days.

CHRONIC EFFECTS OF EXPOSURE...: Based on animal studies, no adverse effects or symptoms would be expected from chronic exposure to this material.

CARCINOGENICITY.....: This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA.

MEDICAL CONDITIONS

AGGRAVATED BY EXPOSURE.....: No specific medical conditions are known which may be aggravated by exposure to this product. As with all materials which can cause upper respiratory tract irritation, persons with a history of asthma, emphysema, or hyperreactive airways disease may be more susceptible to overexposure.

4. FIRST AID MEASURES:

FIRST AID FOR EYES.....: Hold eyelids open and flush with copious amounts of water for 15 minutes. Call a physician if irritation develops or persists

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4. FIRST AID MEASURES (Continued)

after flushing.

FIRST AID FOR SKIN.....: Remove contaminated clothing immediately. Wash skin with soap and water, preferably preceded by a waterless hand cleaner. Get medical attention if irritation develops or persists. If signs of intoxication (poisoning) occur, get medical attention immediately.

FIRST AID FOR INHALATION: If a person is overcome by excessive exposures to aerosols or vapors of this material, remove to fresh air or uncontaminated area. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention as soon as possible.

FIRST AID FOR INGESTION.: If ingestion is suspected, call a physician or poison control center. Drink one or two glasses of water and induce vomiting by touching back of throat with finger, or, if available, by administering syrup of ipecac. If syrup of ipecac is available, administer 1 tablespoonful (15 mL) of syrup of ipecac followed by 1 to 2 glasses of water. If vomiting does not occur within 20 minutes, repeat the dose once. Do not induce vomiting or give anything by mouth to an unconscious person.

NOTE TO PHYSICIAN.....: ANTIDOTE: No specific antidote is available. Treat victim symptomatically. Published data indicate vitamin E acetate can prevent and/or mitigate symptoms of paresthesia caused by synthetic pyrethroids. In case of poisoning, it is also requested that Bayer Corp., Agriculture Division, Kansas City, Missouri, be notified. Telephone: 1-800-414-0244

5. FIRE FIGHTING MEASURES:

FLASH POINT.....: Greater than 200 F (93 C)

EXTINGUISHING MEDIA.....: Water; Foam; Dry Chemical

SPECIAL FIRE FIGHTING PROCEDURES: Keep out of smoke. Cool exposed containers with water spray. Fight fire from upwind position. Use self-contained breathing equipment. Contain runoff to prevent entry into sewers or waterways. Equipment or materials involved in pesticide fires may become contaminated.

6. ACCIDENTAL RELEASE MEASURES:

SPILL OR LEAK PROCEDURES.....: Isolate area and keep unauthorized people away. Do not walk through spilled material. Avoid breathing vapors and skin contact. Remove sources of ignition if combustible or flammable vapors may be present and ventilate area. Wear proper protective equipment. Dike contaminated area with absorbent granules, soil, sand, etc. If large spill, material should be recovered. Small spills can be absorbed with absorbent granules, spill control pads, or any absorbent material. Carefully sweep up absorbed spilled material. Place in covered container for reuse or disposal. Scrub contaminated area with soap and water. Use dry absorbent materials such as clay granules to absorb and

6. ACCIDENTAL RELEASE MEASURES (Continued)

collect wash solution for proper disposal. Contaminated soil may have to be removed and disposed. Do not allow material to enter streams, sewers, or other waterways or contact vegetation.

7. HANDLING AND STORAGE:

STORAGE TEMPERATURE(MIN/MAX): 0 F/30 day avg. not to exceed 100 F
 SHELF LIFE.....: Time/temperature-dependent. Contact Bayer for specific information.
 SPECIAL SENSITIVITY.....: Not established
 HANDLING/STORAGE PRECAUTIONS: Store in a cool, dry area designated specifically for pesticides.

8. PERSONAL PROTECTION:

EYE PROTECTION REQUIREMENTS.....: Goggles should be used to prevent liquid from getting into eyes.
 SKIN PROTECTION REQUIREMENTS.....: Avoid skin contact. Wear long sleeves and trousers.
 HAND PROTECTION REQUIREMENTS.....: Chemical-resistant gloves such as neoprene
 VENTILATION REQUIREMENTS.....: Control exposure levels through the use of general and local exhaust ventilation.
 RESPIRATOR REQUIREMENTS.....: When respiratory protection is necessary under the conditions of use, wear a NIOSH-approved organic vapor respirator with dust and mist filter.
 ADDITIONAL PROTECTIVE MEASURES.....: Clean water and soap should be available for washing in case of eye or skin contamination. Waterless hand cleaner use is often more effective than soap and water. Sensitive areas of the skin and mucous membranes can become contaminated indirectly. Educate and train employees in safe use of the product. Follow all label instructions. Launder clothing separately after use. Wash thoroughly after handling.

9. PHYSICAL AND CHEMICAL PROPERTIES:

PHYSICAL FORM.....: Liquid
 APPEARANCE.....: Off-white to beige viscous liquid suspension
 COLOR.....: Beige
 ODOR.....: Chalky
 MOLECULAR WEIGHT.....: 434.3 (for beta-cyfluthrin)
 pH: 7-8
 BOILING POINT.....: Not established
 MELTING/FREEZING POINT....: Approx. 20 F

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9. PHYSICAL AND CHEMICAL PROPERTIES (Continued)

VISCOSITY.....: 1060 cps @ 23 C
 SOLUBILITY IN WATER: Not established
 SPECIFIC GRAVITY: 1.06 @ 20 C/20 C
 BULK DENSITY.....: Not established
 VAPOR PRESSURE: 7.2×10^{-9} mm Hg @ 20 C (for beta-cyfluthrin)

10. STABILITY AND REACTIVITY:

STABILITY.....: This is a stable material.
 HAZARDOUS POLYMERIZATION....: Will not occur.
 INCOMPATIBILITIES.....: Alkaline media; reacts with methanol; incompatible with many disinfectants.
 INSTABILITY CONDITIONS.....: Not established
 DECOMPOSITION PRODUCTS.....: Not established

11. TOXICOLOGICAL INFORMATION:

Only acute studies have been performed on this product as formulated. The non-acute information pertains to the active ingredient, cyfluthrin technical, and its enriched isomer mixture, BAY FCR 4545 technical.

ACUTE TOXICITY

ORAL LD50.....: Male rat: 960 mg/kg -- Female rat: 1150 mg/kg
 DERMAL LD50.....: Male and Female Rat: >2000 mg/kg
 INHALATION LC50.....: 4 hr exposure to Liquid Aerosol: Male and Female Rat: >1.72 mg/L (analytical) -- 1 hr exposure to Liquid Aerosol (extrapolated from 4 hr): Male and Female Rat: >6.88 mg/L (analytical)
 EYE EFFECTS.....: Rabbit: Mild irritation to the conjunctiva was observed with all irritation cleared within 7 days post-treatment.
 SKIN EFFECTS.....: Rabbit: Not a dermal irritant
 SENSITIZATION.....: Guinea pig: Not a dermal sensitizer
 SUBCHRONIC TOXICITY...: FCR 4545: In a 13 week dog study, FCR 4545 was administered at dietary concentrations of 10, 60 or 360 ppm. Effects included vomiting and diarrhea after feeding, decreased body weight gain, and motor disturbances in the hind limbs. The no-observed effect-level (NOEL) was 60 ppm. In a 13 week study using rats, FCR 4545 was administered at dietary concentrations of 30, 125 or 500 ppm. Effects included reduced body weight gains and feed consumption, uncoordinated gait, and skin injuries of the neck and head from excessive preening due to the local irritant effect of the test material. The NOEL was 125 ppm. In a 4 week inhalation study, rats were exposed to FCR 4545 at liquid aerosol concentrations of 0.2, 2.7 or 23.5 mg/m³. Effects observed included ungroomed fur, piloerection, hyper- and hypoactivity, reduced body weight gains, reduced organ weights (thymus and spleen), and hematological changes. The NOEL was 0.2 mg/m³ based on decreased body weight gains. CYFLUTHRIN: In a 3 week dermal toxicity study, cyfluthrin

11. TOXICOLOGICAL INFORMATION (Continued)

was administered to rats for 6 hours/day at dose levels of 100, 340 or 1000 mg/kg. Animals received a total of 17-18 applications in a period of 22-23 days. An additional control and high-dose group were treated and maintained for 14-15 days following treatment so as to ascertain the extent of recovery. Effects observed included reduced feed consumption, red nasal discharge, urine stains, and findings at the dose site (scabbing, crusty, discolored and raised zones). Histologically, epidermal and dermal alterations in treated skin were observed in animals of the mid- and high-dose groups. Similar, but slightly less severe microscopic alterations were also observed in the high-dose recovery group. The overall NOEL was 100 mg/kg. In a 13 week inhalation study, rats were exposed to cyfluthrin at aerosol concentrations of 0.09, 0.71 or 4.51 mg/m³ for 6 hours/day, 5 days/week. The NOEL was 0.09 mg/m³ based on reduced body weight gains.

CHRONIC TOXICITY.....: Cyfluthrin has been investigated in chronic feeding studies using two different strains of rats. In each study, cyfluthrin was administered for 2 years at dietary concentrations ranging from 50 to 450 ppm. Body weight gains were decreased at concentrations of 150 ppm and greater. Changes in clinical chemistries occurred at 450 ppm. In one of the studies, histopathology revealed a numerical increase in mammary gland adenocarcinomas at 450 ppm. This finding was not statistically significant when compared to the controls and is not considered to be compound-related. In each study, the overall NOEL was 50 ppm based on decreased body weight gains. In a 1 year feeding study, dogs were administered cyfluthrin at dietary concentrations of 50, 100, 360 or 650 ppm. Beginning on week 8, the high dose was reduced to 500 ppm for the remainder of the study due to severe clinical neurological symptoms. Body weights were decreased for animals of the high-dose. Neurological findings (gait abnormalities and postural reaction deficits) were observed at doses of 360 and greater. The NOEL was 100 ppm.

CARCINOGENICITY.....: Cyfluthrin was investigated for carcinogenicity in chronic studies using rats and mice at maximum levels of 450 and 800 ppm, respectively. There was no evidence of a carcinogenic potential observed in either species.

MUTAGENICITY.....: In vitro and in vivo mutagenicity studies have been conducted on BAY FCR 4545 technical, all of which are negative. Numerous in vitro and in vivo mutagenicity studies have been conducted on cyfluthrin, all of which are negative.

DEVELOPMENTAL TOXICITY: FCR 4545: In a developmental toxicity study, Bay FCR 4545 technical was administered orally to rats during gestation at doses of 3, 10 or 40 mg/kg. At the lethal and maternally toxic dose of 40 mg/kg, there was a decrease in fetal body weights and an increased incidence of skeletal findings. The NOELs for maternal and developmental toxicity were 3 and 10 mg/kg, respectively. **Cyfluthrin:** In developmental toxicity studies using rats, cyfluthrin was administered during gestation by oral gavage at doses ranging from 1 to 30 mg/kg. The overall NOEL from these studies for maternal toxicity was 3 mg/kg. No developmental effects were observed at any of the doses tested. In each study, the NOEL for developmental toxicity was equivalent to the highest dose tested. The NOELs for developmental toxicity for the initial study and the subsequent study were 30 and 10 mg/kg, respectively. Rabbits were administered cyfluthrin during gestation by oral gavage at doses ranging from 5 to 180 mg/kg. At maternally toxic levels, there was an increased incidence of post-implantation losses. The overall

11. TOXICOLOGICAL INFORMATION (Continued)

NOEL derived from these studies for both maternal and developmental toxicity was 20 mg/kg. In an inhalation study, rats were exposed during gestation to cyfluthrin at aerosol concentrations of 0.46, 2.55 or 11.9 mg/m³ for 6 hours/day. NOELs for maternal and developmental toxicity were less than 0.46 and 0.46 mg/m³, respectively.

REPRODUCTION.....: In a reproduction study, cyfluthrin was administered to rats for 3 generations at dietary concentrations of 50, 150 and 450 ppm. Reproductive effects observed at parentally toxic levels included reductions in viability, lactation, litter size, feed consumption, and pup birth weights and body weight gains. Coarse tremors were observed in some offspring at 450 ppm. The NOEL for both parental and reproductive effects was 50 ppm. In another reproduction study, cyfluthrin was administered to rats for 2 generations at dietary concentrations of 50, 125 or 400 ppm. Coarse tremors occurring in conjunction with parental toxicity were observed in the offspring in the mid- and high-dose groups. Based on this finding, the neonatal NOEL was 50 ppm. The NOELs for parental and reproductive toxicity were 50 and 400 ppm, respectively.

NEUROTOXICITY: Numerous neurotoxicity studies have been conducted on cyfluthrin. Oral gavage studies using hens have indicated that at extremely high dose levels (5000 mg/kg), minimal nerve damage occurs. When rats were administered cyfluthrin daily at oral doses of 40 to 80 mg/kg for 14 days, minimal nerve effects were seen. These effects were completely reversible within a 3 month recovery period. In dermal and inhalation studies which are relevant to field exposure, there was no evidence of delayed neurotoxicity in hens. In a special investigative study, litters of neonatal mice (10 days of age) and their mothers were exposed to aerosol concentrations of 5, 15, or 50 mg/m³ for 6.3 hours/day for 7 successive days. Motor activity was measured in the offspring at 4 months of age (approximately 3.5 months post-exposure). At 50 mg/m³, all of the offsprings died or were sacrificed in a moribund state following the first exposure. Mortalities were not observed at any of the other levels. Clinical symptoms were observed immediately after exposure in young mice at 15 mg/m³, and included decreased motility, temporary scratching, and tonic convulsions. There was an increase in motor activity in mice at 15 mg/m³. Histopathological investigations did not reveal any treatment-related findings in mice at the age of 4 months.

12. ECOLOGICAL INFORMATION:

This product is extremely toxic to fish and aquatic invertebrates, and is highly toxic to bees. Bayer will provide a summary of specific data upon written request. As with any pesticide, this product should be used according to label directions and should be kept out of streams, lakes and other aquatic habitats of concern. In event of a spill emergency, call 1-800-414-0244.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD.....: Follow container label instructions for disposal of wastes generated during use in compliance with the FIFRA product label. In other situations, bury in an EPA approved landfill or burn in an incinerator approved for pesticide destruction.

EMPTY CONTAINER PRECAUTIONS.: Do not reuse container without written permission and instructions from Bayer. Empty, clean and dispose in accordance with state and local laws.

14. TRANSPORTATION INFORMATION:

TECHNICAL SHIPPING NAME.....: beta-Cyfluthrin
FREIGHT CLASS PACKAGE.....: Insecticides, NOI, NMFC 102100
PRODUCT LABEL.....: TEMPO SC Ultra Premise Spray

DOT (DOMESTIC SURFACE)

HAZARD CLASS OR DIVISION: Non-Regulated

It is not expected that a mist or vapor hazard would exist from the normal transportation of this liquid substance.

IMO / IMDG CODE (OCEAN)

HAZARD CLASS DIVISION NUMBER...: Non-Regulated

ICAO / IATA (AIR)

HAZARD CLASS DIVISION NUMBER...: Non-Regulated

15. REGULATORY INFORMATION:

OSHA STATUS.....: This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200.

TSCA STATUS.....: This product is exempt from TSCA Regulation under FIFRA Section 3 (2) (B) (ii) when used as a pesticide.

CERCLA REPORTABLE QUANTITY...: No components listed.

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15. REGULATORY INFORMATION (Continued)

SARA TITLE III:

SECTION 302 EXTREMELY

HAZARDOUS SUBSTANCES.: No components listed.

SECTION 311/312

HAZARD CATEGORIES.....: Immediate Health Hazard

SECTION 313

TOXIC CHEMICALS.....: beta-Cyfluthrin (11.8%) - CAS # 68359-37-5

RCRA STATUS.....: If discarded in its purchased form, this product would not be a hazardous waste either by listing or by characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste. (40 CFR 261.20-24)

16. OTHER INFORMATION:

NFPA 704M RATINGS: Health Flammability Reactivity Other
 1 1
 0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

Bayer's method of hazard communication is comprised of Product Labels and Material Safety Data Sheets. NFPA ratings are provided by Bayer as a customer service.

REASON FOR ISSUE.....: Create new MSDS
 PREPARED BY.....: V. C. Standart
 APPROVED BY.....: D. C. Eberhart
 TITLE.....: Director Product Safety & Stewardship
 APPROVAL DATE.....: 05/06/2002
 SUPERSEDES DATE.....: None
 MSDS NUMBER.....: 29752

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of Bayer Corporation. The data on this sheet relates only to the specific material designated herein. Bayer Corporation assumes no legal responsibility for use or reliance upon these data.

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It's Really Going Places.

Consumer Product Information

TalstarOne™ Multi-Insecticide

Date Prepared: 23 April, 2004

1. Product Information

Dilution of TalstarOne multi-insecticide, EPA Reg. # 279-3206
Chemical Family: Pyrethroid Insecticide

2. Manufacturer Information

Manufacturer:

FMC Corporation
Agricultural Products Group
1735 Market Street
Philadelphia, PA 19103

Telephone Numbers:

Emergency Phone: (800)-331-3148
Spill Emergency: (800)-331-3148
Technical Information: (800)-321-1362

3. Active Ingredient

Bifenthrin (0.12%) dilution
Typical use rates are between 0.001% and 0.06%

CAS No.

82657-04-3

4. General Information and Precautions

Highly toxic to fish and aquatic organisms. Care should be used when spraying to avoid fish and reptile pets. Wash thoroughly with soap and water after handling.

5. Health Hazard Information

General Health/Toxicity Information for 0.12% Suspension:

Acute Oral LD50	>20,000 mg/kg
Acute Dermal LD50	>10,000 mg/kg

This diluted material has a low oral and dermal toxicity, it is minimally irritating to the eyes and non-irritating to the skin. In rare occurrences, exposure to TalstarOne multi-insecticide end use dilution produces skin sensations such as burning, numbness or tingling during application. These sensations generally occur in the area of the body contacted by the diluted product and last for a few hours. This reaction, should it occur, produces some discomfort but does not result in skin damage.

6. First Aid Procedures (Dilutions or Emulsions Only)

- Ingestion: Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. If any discomfort persists, obtain medical attention.
 - Inhalation: Remove to fresh air. If breathing difficulty or discomfort occurs and persists, obtain medical attention.
 - Dermal: Wash with plenty of soap and water.
 - Eye: Flush with plenty of water. Get medical attention if irritation occurs and persists.
 - Note to Physician or Emergency Personnel: TalstarOne multi-insecticide suspension contains a low concentration of the pyrethroid bifenthrin and primarily water. Should reversible skin sensations occur, skin salves have been found useful in reducing discomfort. Treatment is otherwise removal of exposure followed by symptomatic and supportive care.
-

7. Fire and Hazards Information

- The water-based suspension of TalstarOne multi-insecticide is not explosive or flammable.
-

8. Environmental Hazards Information

- This product is extremely toxic to fish. Do not contaminate water when disposing of equipment wash-waters. Do not apply directly to any body of water. Care should be used when spraying to avoid fish and reptiles.
-

9. Storage and Disposal and Spill Information

- Keep out of reach of children. Store in a cool, dry place and avoid excess heat. Do not put concentrate or dilute material into food or drink containers.
 - Isolate and post spill area. Keep animals and unprotected persons out of area. Keep emulsion out of streams and sewers. Dike to confine spills, and absorb with absorbent such as clay, sand or cat litter. Place in a DOT approved drum and contact appropriate regulatory agencies prior to disposal. To decontaminate spill area, tools and equipment, wash with a detergent/water mixture and properly dispose of solution as contaminated waste.
-

10. Additional Information

- For safety and health information concerning the undiluted concentrate product, refer to the Material Safety Data Sheet for TalstarOne multi-insecticide.
-

Disclaimer: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Status: Effective 4/2004

TalstarOne and FMC Logo - FMC Trademarks

B0039

Bauer,Jaime

From: Allen, John [John.Allen@iluka.com]
Sent: Tuesday, November 06, 2007 4:40 PM
To: Bauer,Jaime
Cc: Jenkins,Ray
Subject: Corrected retention time page

Jaime,

Attached is the corrected retention time calculation page that you requested.

Sorry for the delay.

Regards,

John A. Allen

Environmental Officer

Iluka Resources Inc

Office: (434)-348-4315

Cell: (804)-943-5611

john.allen@iluka.com

<<Retention_time.pdf>>

NOTICE - Mail attachments have been compressed automatically and appear as .ZIP files. Should you be unable to access compressed attachments free compression software (e.g FreeZip) is readily available from the Internet.

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Recvd. 4/4/07

APPENDIX 4

RETENTION TIME CALCULATIONS FOR RETENTION POND B

Flow from the 1 hour / 25 year storm event was calculated using the Rational Method:

$$Q = C \times i \times A$$

Q = Flow (cfs)

C = Runoff Coefficient

i = Inches of rain produced by the 1 hour / 25 year storm event

A = Acres of drainage area

As described in the Virginia Department of Conservation and Recreation's *Virginia Erosion and Sediment Control Handbook*, Third Edition, 1992.

The following values were used in the calculation:

The runoff coefficient (**C**) for the site is estimated to be **0.5**, based on the Land Use classification of Light Industrial.

Rainfall expected from the 1 hour / 25 year storm event (**i**) is approximately **2.75 inches**. This is based on the average of the City of Richmond and Greenville County curve values obtained from the DCR ESC Handbook.

The area (**A**) served by Retention Pond B is approximately **11.85 acres**.

Therefore:

$$\begin{aligned} Q &= 0.5 \times 2.75 \text{ in} \times 11.85 \text{ ac} \\ &= 16.3 \text{ cubic feet per second} \\ &\Rightarrow 978 \text{ cubic feet per minute} \\ &\Rightarrow 7,316 \text{ gallons per minute} \end{aligned}$$

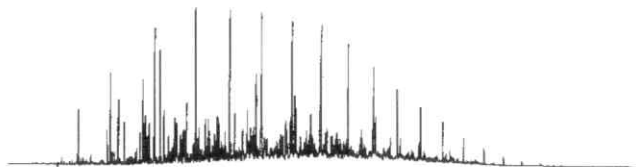
The volume of Retention Pond ³B is approximately **1.1 million gallons**.

Therefore, retention time for runoff produced by the 1 hour / 25 year storm is:

$$\begin{aligned} \text{Retention Time} &= 1,100,000 \text{ gallons} \div 7,316 \text{ gallons per minute} \\ &= 150.4 \text{ minutes} \\ &\Rightarrow \mathbf{2.5 \text{ hours}} \end{aligned}$$

Primary Laboratories, Inc.

7423 Lee Davis Road • Mechanicsville, VA 23111 • Telephone (804) 559-9004 • Fax (804) 559-9306



J. Bragg
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JAN 30 2008

1230

ANALYTICAL LABORATORY REPORT

24-Jan-08

ILUKA Resource, Inc.
Attn: Kevin Rideout
12472 St. John Church Road
Stony Creek, Virginia 23882

Date Received: 22-Jan-08
Date Sampled: 21-Jan-08
Work Order No: 0801151-01
Client ID: **Outfall 002**

Test Description	Final Result	Reporting Limit	Units of Measure	Standard Methods (18)	Date Analyzed	Tech. Initials
Metals						
Nickel	<0.020	0.020	mg/L	3030E/3120B	24-Jan-08 at 13:38	HV
Zinc	0.049	0.010	mg/L	3030E/3120B	24-Jan-08 at 13:38	HV

Note: Sample received in laboratory on ice.

Signature: _____

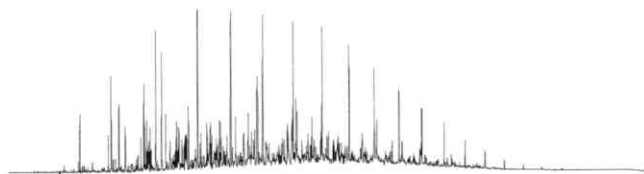
Parry L. Bragg
Laboratory Manager

Date: 1/24/08

These analytical results are based upon materials provided by the client and are intended for the exclusive use of the client. These analytical results represent the best judgement of Primary Laboratories, Inc. Primary Laboratories, Inc. assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report. This report is not to be reproduced except with the written approval of Primary Laboratories, Inc.

Primary Laboratories, Inc.

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ANALYTICAL LABORATORY REPORT

4-Jan-08

Iluka Resources, Inc
Attn: Kevin Rideout
12472 St Johns Church Road
Stoney Creek, VA 23882

Project: Outfall 002 Renewal
Date Received: 31-Dec-07
Date Sampled: 31-Dec-07
Work Order No: 0801001-01
Client ID: **Outfall 002 (MSP)**

Test Description	Final Result	Reporting Limit	Units of Measure	Standard Methods (18)	Date Analyzed	Tech. Initials
Ammonia	0.09	0.01	mg/L	4500NH ₃ F	3-Jan-08 at 8:00	NA
Alkalinity	1.9	0.1	mg/L	2320 B	3-Jan-08 at 12:00	NA
TKN	6.8	0.5	mg/L	4500 N/ _{NH3}	3-Jan-08 at 9:30	NA
Nitrite	0.055	0.005	mg/L	4500 NO ₂ ⁻ B	2-Jan-08 at 9:15	NA
Nitrate	1.44	0.05	mg/L	4500 NO ₃ ⁻ E	2-Jan-08 at 15:45	NA
Sulfate	232.10	2.0	mg/L	4500SO ₄ ²⁻ E	4-Jan-08 at 13:30	NA

Primary Laboratories, Inc.
Results

4-Jan-08

Date Sampled: 31-Dec-07
Work Order No: 0801001-01
Client ID: **Outfall 002 (MSP)**

Test Description	Final Result	Reporting Limit	Units of Measure	Standard Methods (18)	Date Analyzed	Tech. Initials
Metals						
Arsenic	<50	50	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Barium	41	20	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Cadmium	<10	10	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Chromium	23	20	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Iron	604	50	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Lead	<50	50	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Mercury	<0.2	0.2	ug/L	3112 B	3-Jan-08 at 13:30	HV
Potassium	7,640	1,000	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Selenium	<50	50	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Silver	<20	20	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Sodium	4,050	1,000	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV
Titanium	<20	20	ug/L	3030E/3120B	4-Jan-08 at 11:07	HV

NOTE: Samples received in laboratory on ice.

Signature:  Date: 1-4-08
Parry L. Bragg
Laboratory Manager

These analytical results are based upon materials provided by the client and are intended for the exclusive use of the client. These analytical results represent the best judgement of Primary Laboratories, Inc. Primary Laboratories, Inc. assumes no responsibility, express or implied, as to the interpretation of the analytical results contained in this report. This report is not to be reproduced except with the written approval of Primary Laboratories, Inc.



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

PIEDMONT REGIONAL OFFICE

4949-A Cox Road, Glen Allen, Virginia 23060

(804) 527-5020 Fax (804) 527-5106

www.deq.virginia.gov

L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

Gerard Seeley, Jr.
Regional Director

TO: Curt Linderman
FROM: Jaime Bauer
DATE: November 9, 2007
SUBJECT: Waiver Request for VA0090981 – Iluka Resources Inc, Mineral Separation Plant
COPIES: File (R/G, right)

Iluka Resources Inc. is requesting a waiver from composite sampling for all required parameters for the effluent testing from Retention Pond 3 (Outfall 002) and asks that grab samples be accepted to satisfy the VPDES permit application requirements. They are also requesting that previous sampling data greater than 3 years old be accepted to satisfy the requirements of Form 2F Section VII Part C.

Reasons:

The permit application for Storm Water Discharges Associated with Industrial Activity (Form 2F) automatically allows the use of grab samples in lieu of composite samples from holding ponds with retention periods greater than 24 hours. The retention period at Pond 3 is estimated to be 2.5 hours; therefore they do not qualify for the automatic waiver. Documentation provided by the facility shows a submersible pump located in the southwest corner of the pond that recirculates the water within the pond prior to discharge. The facility believes that the mixing creates an effluent of consistent quality therefore a grab sample would provide a representative sample of the effluent.

Iluka is also requesting that test data from 2000 be accepted to satisfy the permit application requirements in Form 2F Section VII Part C so that the permit reissuance can proceed. The facility has stated that the 2000 data is still representative of facility operations. Form 2F provides that past data can be used if it is less than 3 years old, the samples are representative of the present discharge, and all requirements are met. Because the data is from 2000, it does not meet the requirements listed in the permit application. The waiver is being requested due to lack of qualifying storm events over the past several months and the current permit will expire on January 26, 2008.

I recommend that the grab samples be accepted as representative samples for the purpose of satisfying the permit application requirements in Form 2F.

The facility has submitted a plan to join Retention Pond 3 and the Sediment Pond by breaching a berm currently separating them. The outfall from the Sediment Pond will be closed. Following that construction, staff intends to require sampling at Outfall 002 which should confirm the data reported in the permit renewal application.

I recommend that the 2000 sampling results be accepted as adequate for the permit renewal application.

☒ Approved

☐ Denied

Comments:

As recommended, for this permit cycle only. The special condition requiring Outfall 002 sampling (post-breach) should include a pre-open clause.

Signature

Date

11/13/07

October 29, 2007

Ms. Jaime Bauer
DEQ-PRO
4949 A Cox Road
Glen Allen, VA 23060

RE: Request for Composite Sampling Waiver and Statement Regarding Validity of Data.

Ms. Bauer:

Iluka would like to request a waiver for composite sampling requirements in Form 2F for outfall 002. While detention time in Retention Pond 3 is less than 24 hours for the 25 year storm event, it is my belief that the grab samples taken from this outfall are representative of the pond's overall water quality. This is due to use of a submersible pump to recirculate and mix the water within the pond. The pump is located in the southwest corner of the pond and discharges toward the north at a rate of 200 to 300 gpm. This provides adequate mixing of the pond's water to ensure a discharge of relatively consistent quality. Please see the enclosed figure depicting the placement of the submersible pump, its discharge point and the probable circulation patterns within the pond.

Iluka would also like to request that the data from 2000 which was submitted in Part VII Section C of Form 2F be accepted for the purposes of the renewal. I believe that there have been no materials handling or process changes at the site which would result in significant variations from the 2000 data. Iluka proposes to resample for these parameters at the first opportunity.

Your consideration of these requests is greatly appreciated.

Sincerely,



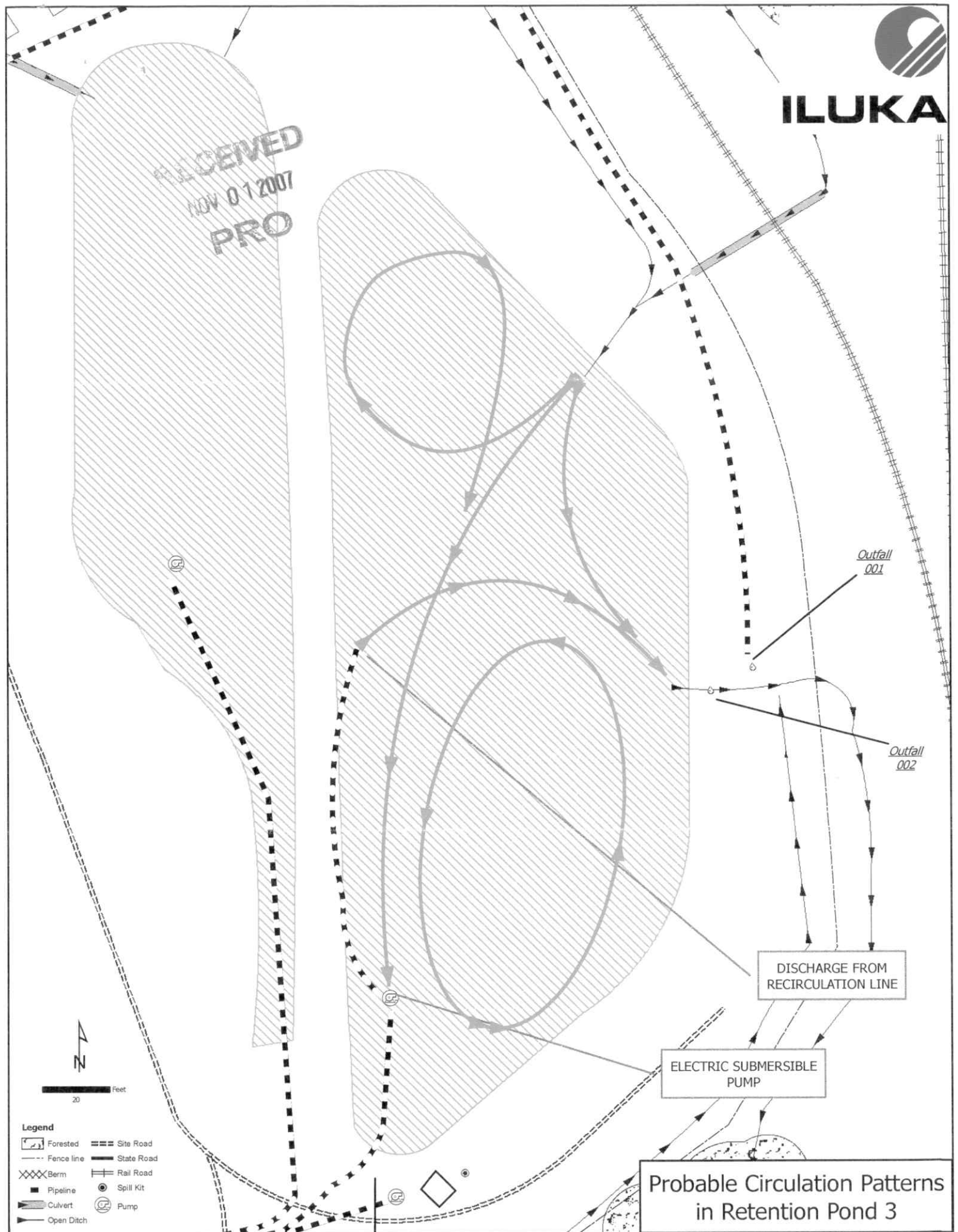
John A. Allen
Environmental Officer

Enclosure



ILUKA

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NOV 01 2007
PRO





ILUKA

USPS – Certified, Return Receipt Requested

April 17, 2008

Ms. Jaime Bauer
VPDES/VPA Permit Writer
Department of Environmental Quality
Piedmont Regional Office
4949-A Cox Road
Glen Allen, VA 23060

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APR 21 2008

PRO

RE: Application for Process Water Discharge Outfall 004

Dear Ms. Bauer:

During the renewal period for VPDES Permit Number 0090981, Iluka has submitted two proposed amendments for consideration by DEQ. These proposed amendments are:

1. Removal of the berm separating Retention Pond 3 from the Sediment Pond and sealing of the Sediment Pond outfall
2. Addition of the Admin Stormwater Pond and it's outfall to the site's Individual Permit as outfall 003

Both of the above referenced ponds and their outfalls are currently covered under the site's General Stormwater Permit, VPDES #VAR051217. These proposed changes will remove the need for the site to maintain this permit.

While VA0090981 is open for renewal and consideration of these amendments, Iluka would like to propose the addition of outfall 004 to serve as a discharge point for excess water from the site's Process Water Ponds. A full description of the proposed change is outlined in the Narrative document attached with Form 2C.

If you have any questions or need additional information or clarification regarding this proposal please contact me at the numbers listed below or via email at john.allen@iluka.com.

Regards,

John A. Allen
Environmental Officer
804-943-5611 (C)
434-348-4315 (O)

EPA I.D. NUMBER (copy from Item 1 of Form 1)
VA0090981

Form Approved.
OMB No. 2040-0086.
Approval expires 3-31-98.

Please print or type in the unshaded areas only.

FORM
2C
NPDES



U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURE OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
004 (proposed)	36	58	10.41	77	24	11.75	GALLEY SWAMP
							see Fig. 1 for location

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures. Please See APPENDIX 1, FIGURE 3.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT		
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1	
004 (proposed)	Mineral sands processing and handling.	NA*	See Document 1	1-O, 1-U	4-A, 4-C

OFFICIAL USE ONLY (effluent guidelines sub-categories)

* - 004 is not a current discharge point.

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal? <input checked="" type="checkbox"/> YES (complete the following table) <input type="checkbox"/> NO (go to Section III)								
1. OUTFALL NUMBER (list)	2. OPERATION(S) CONTRIBUTING FLOW (list)	3. FREQUENCY		4. FLOW				C. DURATION (in days)
		a. DAYS PER WEEK (specify average)	b. MONTHS PER YEAR (specify average)	a. FLOW RATE (in mgd)		B. TOTAL VOLUME (specify with units)		
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	
004 (proposed)	Mineral sands processing and handling.	1 average (est.)	1 average (est.)	1 mgd (est.)	1.4 mgd (est.)	1 mgd (est.)	1.4 mgd (est.)	1 (est.)
III. PRODUCTION								
A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility? <input checked="" type="checkbox"/> YES (complete Item III-B) <input type="checkbox"/> NO (go to Section IV)								
B. Are the limitations in the applicable effluent guideline expressed in terms of production (or other measure of operation)? <input type="checkbox"/> YES (complete Item III-C) <input checked="" type="checkbox"/> NO (go to Section IV)								
C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.								
1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS (list outfall numbers)					
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. (specify)						
na	na	na				na		
IV. IMPROVEMENTS								
A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operations of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions. <input type="checkbox"/> YES (complete the following table) <input checked="" type="checkbox"/> NO (go to Item IV-B)								
1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE				
	a. NO	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED			
na	na	na	na	na	na			
B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs (or other environmental projects which may affect your discharges) you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction. <input type="checkbox"/> MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED								

EPA I.D. NUMBER (copy from Item 1 of Form 1)
VA0090981

CONTINUED FROM PAGE 2

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding – Complete one set of tables for each outfall – Annotate the outfall number in the space provided.

NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in your possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
None	na		

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☐ YES (list all such pollutants below)

☒ NO (go to Item VI-B)

na

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ YES (identify the test(s) and describe their purposes below)

☐ NO (go to Section VIII)

No Whole Effluent Toxicity (WET) testing has been performed on proposed outfall 004. WET samples have been taken from outfall 001 as a condition of Virginia Department of Environmental Quality's (DEQ) Virginia Pollution Discharge Elimination Program (VPDES) permit VA0090981. These samples were submitted to Coastal Bioanalysts Inc, in Gloucester, VA for testing. The results of this testing have been submitted to DEQ.

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ YES (list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)

☐ NO (go to Section IX)

A. NAME	B. ADDRESS	C. TELEPHONE (area code & no.)	D. POLLUTANTS ANALYZED (list)
Primary Laboratories	7423 Lee Davis Road Mechanicsville, VA 23111	804-559-9004	See Attached Lab Report Sheets.

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (type or print)

John A. Allen, Environmental Officer

B. PHONE NO. (area code & no.)

(804) 943-5611

C. SIGNATURE



D. DATE SIGNED

4/17/2008

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☒ YES (identify the test(s) and describe their purposes below)

☐ NO (go to Section VIII)

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Primary Laboratories	7423 Lee Davis Road Mechanicsville, VA 23111	804-559-9004	See Attached Lab Report Sheets.

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE (type or print)

Allan R. Sale, President, Iluka US Operations

B. PHONE NO. (area code & no.)

(434) 348-4300

C. SIGNATURE

Allan R. Sale

D. DATE SIGNED

4/24/08

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PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets (use the same format) instead of completing these pages.
SEE INSTRUCTIONS.

EPA ID. NUMBER (copy from Item 1 of Form 1)
VA0090981

V. INTAKE AND EFFLUENT CHARACTERISTICS (continued from page 3 of Form 2-C)										OUTFALL NO. 004	
PART A – You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.											
1. POLLUTANT	2. EFFLUENT				3. UNITS (specify if blank)				4. INTAKE (optional)		
	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					(1) CONCENTRATION	(2) MASS	
a. Biochemical Oxygen Demand (BOD ₅)							1	mg/L			
b. Chemical Oxygen Demand (COD)							1	mg/L			
c. Total Organic Carbon (TOC)							1	mg/L			
d. Total Suspended Solids (TSS)							1	mg/L			
e. Ammonia (as N)							1	mg/L			
f. Flow	VALUE	na	VALUE	na	VALUE	na	0		VALUE		
g. Temperature (winter)	VALUE	20.8	VALUE	17.4	VALUE	15.5	52	°C	VALUE		
h. Temperature (summer)	VALUE	36.2	VALUE	33.7	VALUE	31.8	36	°C	VALUE		
i. pH	MINIMUM	4.24	MAXIMUM	9.07	MINIMUM	5.22	MAXIMUM	6.17			
							138	STANDARD UNITS			

PART B – Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.														
1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT				4. UNITS				5. INTAKE (optional)			
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS						
a. Bromide (2459-67-9)		X												
b. Chlorine, Total Residual	X		24.1						1	mg/L				
c. Color		X												
d. Fecal Coliform	X		<2						1	MPN/100mL				
e. Fluoride (16984-48-8)		X												
f. Nitrate-Nitrite (as N)		X												

Note: Chlorides data obtained using procedure 4500CL B from Standard Methods (18) supplied for Total Residual Chlorine values.

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (if available)	2. MARK "X"		3. EFFLUENT				4. UNITS		5. INTAKE (optional)				
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (if available)		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1)		b. NO. OF ANALYSES
			(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					(1) CONCENTRATION	(2) MASS	
g. Nitrogen, Total Organic (as N)		X											
h. Oil and Grease		X											
i. Phosphorus (as P), Total (7723-14-0)		X											
j. Radioactivity													
(1) Alpha, Total	X		17.8 ± 2.3						1	pCi/L			
(2) Beta, Total	X		13.2 ± 1.0						1	pCi/L			
(3) Radium, Total		X											
(4) Radium 226, Total		X											
k. Sulfate (as SO ₄), (14808-79-8)		X											
l. Sulfide (as S)		X											
m. Sulfite (as SO ₃), (14265-45-3)		X											
n. Surfactants		X											
o. Aluminum, Total (7429-90-5)		X											
p. Barium, Total (7440-39-3)		X											
q. Boron, Total (7440-42-8)		X											
r. Cobalt, Total (7440-48-4)		X											
s. Iron, Total (7439-89-6)	X		<0.050						1	mg/L			
t. Magnesium, Total (7439-95-4)		X											
u. Molybdenum, Total (7439-98-7)		X											
v. Manganese, Total (7439-96-5)		X											
w. Tin, Total (7440-31-5)		X											
x. Titanium, Total (7440-32-6)	X		<0.020						1	mg/L			

CONTINUED FROM PAGE 3 OF FORM 2-C

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
VA0090981	004

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a (secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions), mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table (all 7 pages) for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
METALS, CYANIDE, AND TOTAL PHENOLS													
1M. Antimony, Total (7440-36-0)			X										
2M. Arsenic, Total (7440-38-2)			X										
3M. Beryllium, Total (7440-41-7)			X										
4M. Cadmium, Total (7440-43-9)			X										
5M. Chromium, Total (7440-47-3)			X										
6M. Copper, Total (7440-50-8)	X			< 0.020					1	mg/L			
7M. Lead, Total (7439-92-1)	X			< 0.050					1	mg/L			
8M. Mercury, Total (7439-97-6)			X										
9M. Nickel, Total (7440-02-0)	X			< 0.020					1	mg/L			
10M. Selenium, Total (7782-49-2)	X			< 0.050					1	mg/L			
11M. Silver, Total (7440-22-4)			X										
12M. Thallium, Total (7440-28-0)	X			< 0.002					1	mg/L			
13M. Zinc, Total (7440-66-6)	X			0.020					1	mg/L			
14M. Cyanide, Total (57-12-5)	X			< 0.010					1	mg/L			
15M. Phenols, Total			X										
DIOXIN													
2,3,7,8-Tetra-chlorodibenzo-P-dioxin (1764-01-6)			X										
				DESCRIBE RESULTS									

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CONTINUE ON REVERSE

Note: All metals were analyzed using procedure 3030E/3120B for Dissolved Metals from Standard Methods (18)

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1)	(2) MASS	(1)	(2) MASS	(1)	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X												
2V. Acrylonitrile (107-13-1)			X												
3V. Benzene *	X			<0.10						1	µg/L				
4V. Bis (Chloromethyl) Ether (542-88-1)			X												
5V. Bromoform (75-25-2)			X												
6V. Carbon Tetrachloride (56-23-5)			X												
7V. Chlorobenzene (108-90-7)			X												
8V. Chlorodibromomethane (124-48-1)			X												
9V. Chloroethane (75-00-3)			X												
10V. 2-Chloroethylvinyl Ether (110-75-8)			X												
11V. Chloroform (67-66-3)			X												
12V. Dichlorobromomethane (75-27-4)			X												
13V. Dichlorodifluoromethane (75-71-8)			X												
14V. 1,1-Dichloroethane (75-34-3)			X												
15V. 1,2-Dichloroethane (107-06-2)			X												
16V. 1,1-Dichloroethylene (75-35-4)			X												
17V. 1,2-Dichloropropane (78-87-5)			X												
18V. 1,3-Dichloropropylene (542-75-6)			X												
19V. Ethylbenzene (100-41-4)			X												
20V. Methyl Bromide (74-83-9)			X												
21V. Methyl Chloride (74-87-3)			X												

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CONTINUE ON PAGE V-5

* - Sample was analyzed for Methoxychlor (aka Benzene) CAS# 72-43-5.

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1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION		c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION (2) MASS		b. NO. OF ANALYSES
					(1) CONCENTRATION	(2) MASS					(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION - VOLATILE COMPOUNDS (continued)													
22V. Methylene Chloride (75-09-2)			X										
23V. 1,1,2,2-Tetrachloroethane (79-34-5)			X										
24V. Tetrachloroethylene (127-18-4)			X										
25V. Toluene (108-88-3)			X										
26V. 1,2-Trans-Dichloroethylene (156-60-5)			X										
27V. 1,1,1-Trichloroethane (71-55-6)			X										
28V. 1,1,2-Trichloroethane (79-00-5)			X										
29V. Trichloroethylene (79-01-6)			X										
30V. Trichlorofluoromethane (75-69-4)			X										
31V. Vinyl Chloride (75-01-4)			X										
GC/MS FRACTION - ACID COMPOUNDS													
1A. 2-Chlorophenol (95-57-8)			X										
2A. 2,4-Dichlorophenol (120-83-2)	X			<10					1	µg/L			
3A. 2,4-Dimethylphenol (105-67-9)			X						1	µg/L			
4A. 4,6-Dinitro-O-Cresol (534-52-1)	X			<10									
5A. 2,4-Dinitrophenol (51-28-5)			X										
6A. 2-Nitrophenol (88-75-5)			X										
7A. 4-Nitrophenol (100-02-7)			X										
8A. P-Chloro-M-Cresol (59-50-7)			X										
9A. Pentachlorophenol (87-86-5)			X										
10A. Phenol (108-95-2)			X										
11A. 2,4,6-Trichlorophenol (88-05-2)			X										

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT						4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)		d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS				(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X												
2B. Acenaphthylene (208-96-8)			X												
3B. Anthracene (120-12-7)			X												
4B. Benzidine (92-87-5)	X			<10						1	µg/L				
5B. Benzo (a) Anthracene (56-55-3)			X												
6B. Benzo (a) Pyrene (50-32-8)			X												
7B. 3,4-Benzo-fluoranthene (205-99-2)			X												
8B. Benzo (ghi) Perylene (191-24-2)			X												
9B. Benzo (k) Fluoranthene (207-08-9)			X												
10B. Bis (2-(4-chloroxy) Methane (111-91-1)			X												
11B. Bis (2-(4-chloroxy) Ether (111-44-4)	X			<10						1	µg/L				
12B. Bis (2-(4-chloroisopropoxy) Ether (102-80-1)	X			<10						1	µg/L				
13B. Bis (2-Ethylhexyl) Phthalate (117-81-7)			X												
14B. 4-Bromophenyl Phenyl Ether (101-55-3)			X												
15B. Butyl Benzyl Phthalate (85-68-7)			X												
16B. 2-Chloronaphthalene (91-58-7)	X			<10						1	µg/L				
17B. 4-Chlorophenyl Phenyl Ether (7005-72-3)			X												
18B. Chrysene (218-01-9)			X												
19B. Dibenzo (a,h) Anthracene (53-70-3)			X												
20B. 1,2-Dichlorobenzene (95-50-1)			X												
21B. 1,3-Di-chlorobenzene (541-73-1)			X												

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"		3. EFFLUENT				4. UNITS		5. INTAKE (optional)			
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION		b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION		d. NO. OF ANALYSES	a. CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION		b. NO. OF ANALYSES
				(2) MASS	(1)	(2) MASS	(1)			(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)												
22B. 1,4-Dichlorobenzene (106-46-7)			X									
23B. 3,3-Dichlorobenzidine (91-94-1)	X			<20				1	µg/L			
24B. Diethyl Phthalate (84-66-2)		X										
25B. Dimethyl Phthalate (131-11-3)	X			<10				1	µg/L			
26B. Di-N-Butyl Phthalate (84-74-2)			X									
27B. 2,4-Dinitrotoluene (121-14-2)			X									
28B. 2,6-Dinitrotoluene (606-20-2)			X									
29B. Di-N-Octyl Phthalate (117-84-0)			X									
30B. 1,2-Diphenylhydrazine (as Azobenzene) (122-66-7)	X			<10				1	µg/L			
31B. Fluoranthene (206-44-0)			X									
32B. Fluorene (86-73-7)			X									
33B. Hexachlorobenzene (118-74-1)	X			<10				1	µg/L			
34B. Hexachlorobutadiene (87-68-3)	X			<10				1	µg/L			
35B. Hexachlorocyclopentadiene (77-47-4)	X			<10				1	µg/L			
36B. Hexachloroethane (67-72-1)	X			<10				1	µg/L			
37B. Indeno (1,2,3-cd) Pyrene (193-39-5)	X			<20				1	µg/L			
38B. Isophorone (78-59-1)			X									
39B. Naphthalene (91-20-3)			X									
40B. Nitrobenzene (98-95-3)			X									
41B. N-Nitrosodimethylamine (62-75-9)	X			<10				1	µg/L			
42B. N-Nitrosodimethylamine (621-64-7)	X			<10				1	µg/L			

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)				
	a. TESTING REQUIRED (if available)	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (if available)		b. MAXIMUM 30 DAY VALUE (if available)		c. LONG TERM AVRG. VALUE (if available)	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1)		b. NO. OF ANALYSES
				(1) CONCENTRATION	(2) MASS	(1) CONCENTRATION	(2) MASS					(1) CONCENTRATION	(2) MASS	
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS (continued)														
43B. N-Nitrosodiphenylamine (86-30-6)	X				<10					1	µg/L			
44B. Phenanthrene (85-01-8)			X											
45B. Pyrene (129-00-0)			X											
46B. 1,2,4-Trichlorobenzene (120-82-1)			X											
GC/MS FRACTION – PESTICIDES														
1P. Aldrin (309-00-2)			X											
2P. α-BHC (319-84-6)			X											
3P. β-BHC (319-85-7)			X											
4P. γ-BHC (58-89-9)	X				<0.50					1	µg/L			
5P. δ-BHC (319-86-8)			X											
6P. Chlordane (57-74-9)			X											
7P. 4,4'-DDT (50-29-3)			X											
8P. 4,4'-DDE (72-55-9)			X											
9P. 4,4'-DDD (72-54-8)			X											
10P. Dieldrin (60-57-1)			X											
11P. α-Endosulfan (115-29-7)			X											
12P. β-Endosulfan (115-29-7)			X											
13P. Endosulfan Sulfate (1031-07-8)			X											
14P. Endrin (72-20-8)			X											
15P. Endrin Aldehyde (7421-93-4)			X											
16P. Heptachlor (76-44-8)			X											

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EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
VA0090981	004

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X"			3. EFFLUENT				4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1)	b. MAXIMUM 30 DAY VALUE (if available) (1)	c. LONG TERM AVRG. VALUE (if available) (1)		a. CONCEN- TRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1)	b. NO. OF ANALYSES	
				CONCENTRATION (2) MASS	CONCENTRATION (2) MASS	CONCENTRATION (2) MASS	CONCENTRATION (2) MASS			CONCENTRATION (2) MASS		
GC/MS FRACTION – PESTICIDES (continued)												
17P. Heptachlor Epoxide (1024-57-3)			X									
18P. PCB-1242 (53469-21-9)	X			<1.00				1	µg/L			
19P. PCB-1254 (11097-69-1)	X			<1.00				1	µg/L			
20P. PCB-1221 (11104-28-2)	X			<1.00				1	µg/L			
21P. PCB-1232 (11141-16-5)	X			<1.00				1	µg/L			
22P. PCB-1248 (12672-29-6)	X			<1.00				1	µg/L			
23P. PCB-1260 (11096-82-5)	X			<1.00				1	µg/L			
24P. PCB-1016 (12674-11-2)	X			<1.00				1	µg/L			
25P. Toxaphene (8001-35-2)			X									

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ILUKA

OVERVIEW AND DESCRIPTION OF ILUKA RESOURCES INC. MINERAL SEPARATION PLANT AND PROCESS WATER SYSTEM

1.0 OVERVIEW OF OPERATIONS AND WASTEWATER SOURCES

Iluka Resources' Processing site is situated on 36.6 acres in Sussex County near the town of Stony Creek (see Figure 1). The site contains Iluka's Administration / Laboratory building for the Virginia Operations, as well as the Mineral Separation Plant (MSP), the Effluent Treatment Plant (ETP), and associated storm water management system (see Figure 2 for site layout). Major operations involved in the processing of mineral sands are conducted in and around the MSP and include the following:

- Mineral Sand Concentrate Storage and Plant Feed
- Drying of Concentrate Feed
- Ilmenite and HiTi Circuits
- Zircon Recovery Circuit
- Zircon Finishing Plant Circuit (ZFP)
- Staurolite Removal Circuit
- ETP
- Tailings Removal

A process flow diagram that shows major steps from the mine site to the production of finished products at the MSP is included as Figure 3. The MSP typically operates on a continuous 24 hours per day, 365 days per year schedule. The site currently maintains two outfalls under VPDES Permit No. VA0090981. Outfall 001 serves to discharge treated waste water from the ETP, while outfall 002 discharges storm water from Retention Pond 3^{*}. Iluka is proposing the addition of outfall 004[†] to serve as a discharge point for process water from Process Water Pond 2.

^{*} Removal of the berm separating Retention Pond 3 from the Sediment Pond (VPDES Permit No. VAR051217) has been proposed to DEQ and is currently being reviewed by the agency.

[†] The addition of the Admin Storm water pond's outfall (currently under VPDES Permit No. VAR051217) to Permit #VA0090981 as outfall 003 has been proposed to DEQ and is currently being reviewed by the agency.

1.1 Mineral Sand Concentrate Storage and Plant Feed

At the Virginia Operations' mines and Mine Concentrator sites, mineral sands ore is excavated from relic beach ridge deposits by track-hoe excavators, slurried, and concentrated using various wet gravity separation processes. Approximately 10 percent by weight of the ore body is removed from the excavated material as mineral sand concentrate while the remaining 90 percent clay and sand tailings are returned to the tailings pit in the mine area, graded, and then reclaimed in accordance with all applicable permits. The mineral sand concentrate is pumped from the Mine Concentrator building to a concentrate stacker where excess water is removed and returned to the Mine Concentrator process water pond. The raw mineral sand concentrate, which consists of approximately 90 percent mineral sands, is then hauled by truck approximately 14 miles to the MSP for final separation into the ilmenite, zircon, and staurolite mineral sands products. After weigh-in on the scales at the entrance to the MSP, the trucks dump the raw concentrate in an approximately 1.85-acre storage stockpile area located immediately north of the MSP. Raw concentrate is removed from the stockpile area and fed into the MSP's grizzly feed sump by the site's front end loader.

1.2 Drying of Concentrate Feed

Drying is required to reduce moisture content to less than 0.1 percent by weight prior to electrostatic and electromagnetic processing for separation of titanium bearing-minerals (ilmenite, rutile and leucoxene), zircon, staurolite, and non-conducting gangue minerals. The mineral sand concentrate loaded into the grizzly feed sump is slurried with clean water from the Process Water Ponds, screened, and pumped into the 1,600-ton new feed day tank. Mineral slurry from the day tank is pumped to the scrubber rinse circuit and then to the filter feed cyclones to remove excess water prior to additional dewatering on a belt filter. The belt reduces the moisture content of the feed to approximately 5 percent by weight. The filtrate liquid is pumped to the process water system for reuse. The filter cake

from the belt press is temporarily stored in a bin and then screw fed into a fluid-bed dryer to reduce moisture content to less than 0.1 percent by weight.

1.3 Ilmenite and HiTi Circuit

After the concentrate is sufficiently dried it is screened to remove oversize material, which is sent to the tailings stockpile. The underflow from the screen is fed into high-tension electrostatic (HT) separators, which segregate the electrically conductive ilmenite and rutile from the non-conductive zircon, staurolite and gangue minerals. The conductive minerals are screened and the oversize material is slurried and pumped to the tailings stockpile. The material passing through the screen is sent through a series of magnets to separate the more magnetic titanium-bearing mineral ilmenite from the less magnetic titanium-bearing minerals rutile and leucoxene, collectively referred to as HiTi. The streams of magnetic titanium-bearing minerals from each magnet are combined and conveyed to the ilmenite product storage bin prior to shipment. The less magnetic HiTi minerals pass through a series of electrostatic plate separators to remove any residual non-conductive material before being combined with the ilmenite product stream prior to storage in the ilmenite product storage bin. Various properties of the minerals processed at the MSP can be found in Table 1 below.

Table 1: Properties of Minerals

	Ilmenite	Rutile	Leucoxene	Zircon
Chemical Formula	FeTiO_3	TiO_2	$\text{TiO}_2 + \text{FeTiO}_3$	ZrSiO_4
Specific Gravity	4.25	4.22	3.95	4.69
Magnetic Properties	Conductor Magnetic	Conductor Non-Magnetic	Conductor Weakly Magnetic	Non-Conductor Non-Magnetic

1.4 Zircon Recovery and Finishing Plant Circuits

Zircon recovery from the non-conductive mineral stream is improved by the use of wet gravity separation methods in the portion of the MSP known as the Wet Section. Here the non-conductive minerals are again slurried using process water and passed through a series of nested spirals and over two shaker tables. These methods exploit the variations in the

specific gravities the minerals to separate the heavier zircon from the other, lighter non-conductive minerals. The zircon sand is then pumped in slurry form to the Zircon Finishing Plant (ZFP). Here, the zircon is bathed in a solution of sulfuric acid to remove iron oxides coatings from the surfaces of the grains. The acidic solution is washed from the grains in Rinsing Hydrosizer No. 2 using clean process water from Process Water Pond 2. Treated effluent water from the Effluent Treatment Plant (ETP) is used in all other rinsing steps in the ZFP. The overflow from Rinsing Hydrosizer No. 2 empties into the Rinsing Sump where it is pumped to the ETP for neutralization and treatment. The cleaned zircon concentrate underflow from the Hydrosizer is discharged into a sump and then pumped into a final dewatering cyclone. The dewatered zircon concentrate is conveyed to a vacuum filter belt for additional dewatering and then to the zircon fluid bed dryer for removal of any remaining moisture. The dried zircon concentrate is screened to remove oversized material and fed into a secondary three-stage HT separator to remove any residual conductive material. This conductive material is returned to the primary HT circuit to recover any titanium-bearing minerals. The non-conductive material is passed through a high-intensity magnetic separator circuit to remove any residual magnetic material. The magnetic material is sent to the tailings stockpile while the non-magnetic material (primarily zircon) is screened and conveyed to the zircon product storage bins for shipment.

1.5 Staurolite Removal Circuit

The Staurolite Removal Circuit is also contained within the MSP. The non-conductor stream from the Ilmenite and HiTi Circuit is combined with the non-conductor product from the initial electrostatic separation process to form the feed for the Staurolite Removal Circuit. A bucket elevator and conveyor transport the feed to a set of rare earth roll magnetic separators (RERMS), which produce separate mag1, mag2 and non-mag material streams. The top roll, with its lower magnetic rating, recovers highly magnetic material (mag1); primarily misplaced ilmenite. The mag1 material is directed to the base of the elevator that feeds the conductor screens. The second and third rolls recover paramagnetic material

(mag2) that is passed through an electrostatic separator to scavenge any misplaced conductor material. The paramagnetic conductor stream is sent to the conductor screen elevator along with the mag1 product. The paramagnetic non-conducting staurolite-containing material is presently sent to the conductor oversize sump and from there to the staurolite stacker for disposal as tailings. However, thanks to recent modifications, the staurolite stream can now be diverted to the HiTi storage bin to await shipping if a market for it is discovered. The non-magnetic stream from the RERMS is be directed to a surge bin for storage or as feed to the Zircon Recovery Circuit.

1.6 Tailings

Tailings are slurried and pumped to the tailings stacker located immediately west of the MSP. Excess water from the tailings stacker drains into the Stacker (Process) Turkey Nest. An electric-powered pump then transfers water from the Turkey Nest to the Process Water Ponds for reuse. The dewatered and stacked tailings are loaded into dump trucks and hauled back to the mine sites where they are backfilled into the mine pits and graded for reclamation.

2.0 WATER QUALITY

2.1 Process Water Quality, Storage, Treatment, and Proposed Discharge

The mineral sand concentrate processed at the MSP includes the titanium-bearing minerals ilmenite, rutile, and leucoxene, in addition to zircon, staurolite and miscellaneous gangue minerals. By taking advantage of their differing physical properties (see Table 1), these minerals are separated from each other using non-chemical techniques which include various wet gravity methods, high-tension electrostatic separation, and magnetic separation. The overall quality of the process water is not expected to be effected by the minerals handled in the MSP due to their relatively insoluble nature, and the lack of biological waste components. Process water is simply used to move the products in slurry

form or to facilitate gravity separation (Please see Figure 4 for a water balance diagram of the Process system). Process water is stored in two ponds designated Process Ponds 1 and 2, respectively. In these ponds the water is treated by sedimentation and, to a lesser extent aeration. The pH of the process water declines slowly over time due to the influence of the Primary and Zircon Dryer Stack Scrubbers (VA DEQ Air Permit Reference No. 51220) and so periodic additions of sodium hydroxide (Na_2OH) or hydrated lime are needed to maintain the level within the optimum range of 6 to 9 SU. The pH buffer is typically introduced at the Stacker Turkey nest to allow for maximum mixing and dissolution. Environment, Health & Safety as well as MSP personnel monitor the pH level of the Process Ponds on a regular basis using field pH meters that are standardized annually by the manufacturer (YSI) (see Attachment 1) or an authorized 3rd party, and calibrated according to USGS method I-1586-85. Monitoring is conducted in accordance with techniques established in the 1982 edition of "Techniques of Water-Resources Investigations of the United States Geological Survey, Chapter A6, Quality Assurance Practices for the Chemical and Biological Analyses of Water and Fluvial Sediments."

Iluka proposes to discharge treated Process water from Process Water Pond 2. This pond is equipped with a concrete spillway that was installed during its construction to protect the impoundment from breaching if overtopped due to severe rain events. The proposed discharge would flow down the concrete spillway and enter a culvert to be installed underneath the site access road on the east side of the pond. From there the water will pass through an existing culvert to an onsite ditch, both of which are currently used to convey storm water from the site's Sediment Pond[‡] (VPDES #VAR051217). The flow will then exit the site in the same location as outfalls 001 and 002.

[‡] Sealing of this pond's outfall and combining its volume with Retention Pond 3 to discharge through outfall 002 has been proposed to DEQ.



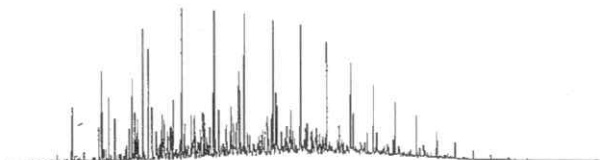
ILUKA

2.1.1 Analytical Testing

Lab reports resulting from analytical testing of the process water are included with this application. All analyses were conducted by Primary Laboratories in Mechanicsville, Virginia.

Primary Laboratories, Inc.

7423 Lee Davis Road • Mechanicsville, VA 23111 • Telephone (804) 559-9004 • Fax (804) 559-9306



ANALYTICAL LABORATORY REPORT

7-Mar-08

ILUKA Resource, Inc.
Attn: Kevin Rideout
12472 St. John Church Road
Stony Creek, Virginia 23882

Date Received: 4-Mar-08
Date Sampled: 3-Mar-08
Work Order No: 0803005-01
Client ID: **MSP Process Pond**

Test Description	Final Result	Reporting Limit	Units of Measure	Standard Methods (18)	Date Analyzed	Time Analyzed	Tech. Initials
TSS ✓	11.5	1.0	mg/L	2540 D	6-Mar-08	11:00	AS

Note: Sample received in laboratory on ice.

Signature: _____

Parry L. Bragg
Laboratory Manager

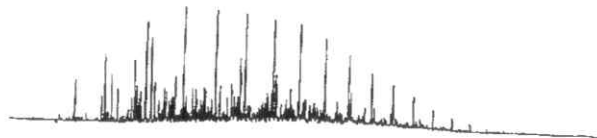
Date: _____

3/7/08

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**ANALYTICAL LABORATORY REPORT**

16-Apr-08

Iluka Resources, Inc
 Attn: Kevin Rideout
 12472 St Johns Church Road
 Stoney Creek, VA 23882

Date Received: 26-Feb-08
 Date Sampled: 26-Feb-08
 Work Order No: 0802205-01
 Client ID: MSP Process Ponds

Test Description	Final Result	Reporting Limit	Units of Measure	Standard Methods (18)	Date Analyzed	Tech. Initials
Dissolved Metals						
Copper	<0.020	0.020	mg/L	3030E/3120B	28-Feb-08 at 12:15	HV
Iron	<0.050	0.050	mg/L	3030E/3120B	29-Feb-08 at 14:12	HV
Lead	<0.050	0.050	mg/L	3030E/3120B	28-Feb-08 at 12:15	HV
Nickel	<0.020	0.020	mg/L	3030E/3120B	28-Feb-08 at 12:15	HV
Selenium	<0.050	0.050	mg/L	3030E/3120B	28-Feb-08 at 12:15	HV
Thallium	<0.002	0.002	mg/L	3030E/3113B	28-Feb-08 at 9:30	HV
Titanium	<0.020	0.020	mg/L	3030E/3120B	29-Feb-08 at 14:12	HV
Zinc	0.020	0.010	mg/L	3030E/3120B	28-Feb-08 at 12:15	HV
Hydrogen Sulfide	<0.05	0.05	mg/L	4500S ₂ E	28-Feb-08 at 11:00	HV
E. coli	<2	2	MPN/100ml	9221 F	26-Feb-08 at 16:45	AS
Chlorides	24.1	0.1	mg/L	4500CL B	28-Feb-08 at 14:30	NA
TOC	3.31	1.00	mg/L	5310 C	28-Feb-08 at 13:00	PB
COD	30.5	4.0	mg/L	5520 C	28-Feb-08 at 13:30	NA

Primary Laboratories, Inc. Results

16-Apr-08

Date Sampled: 26-Feb-08

Work Order No: 0802205-01

Client ID: MSP Process Ponds

Test Description	Final Result	Reporting Limit	Units of Measure	Standard Methods (18)	Date Analyzed	Tech. Initials
BOD	<3.0	3.0	mg/L	5210 B	27-Mar-08 at 12:00	NA
Ammonia	1.33	0.01	mg/L	4500NH ₃ F	28-Feb-08 at 8:00	NA
Strontium-90	0.4 +/- 0.3	0.5	pCi/L	905.0	26-Mar-08	SC*
Tritium	4.8 +/- 87.5	146.9	pCi/L	906.0	11-Apr-08	SC*
Beta Particle Photon	13.2 +/- 1.0	1.5	pCi/L	900.0	5-Mar-08 at 8:00	SC*
Gross Alpha Particle	17.8 +/- 2.3	2.0	pCi/L	900.0	5-Mar-08 at 8:00	SC*

* Analysis sub-contracted.

Units of Measure: ug/L

Standard Methods (18): 608

Date Analyzed: 28-Feb-08

Time Analyzed: 12:28

Technician: HV

Date Sampled: 26-Feb-08

Work Order No: 0802205-01

Client ID: MSP Process Ponds

Test Description	Final Result	Reporting Limit	CAS #
Pesticides			
Gamma-BHC (Lindane)	<0.50	0.50	58-89-9
Methoxychlor	<0.10	0.10	72-43-5
Hexachlorobenzene	<0.10	0.10	118-74-1
PCB 1016	<1.0	1.0	
PCB 1221	<1.0	1.0	
PCB 1232	<1.0	1.0	
PCB 1242	<1.0	1.0	
PCB 1248	<1.0	1.0	
PCB 1254	<1.0	1.0	
PCB 1260	<1.0	1.0	

Primary Laboratories, Inc.
Results

16-Apr-08

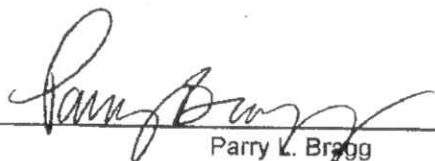
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Date Analyzed: 28-Feb-08
Time Analyzed: 10:54
Technician: HV
Date Sampled: 26-Feb-08
Units of Measure: ug/L
Work Order No: 0802205-01
Client ID:

MSP Process Ponds

Test Description	Final Result	Detection Limit	CAS #
Benzidine	<10	10	92-87-5
bis-(2-Chloroethyl)ether	<10	10	111-44-4
bis-(2-Chloroisopropyl) ether	<10	10	108-60-1
2-Chloronaphthalene	<10	10	91-58-7
3,3-Dichlorobenzidine	<20	20	91-94-1
Dimethyl phthalate	<10	10	131-11-3
2,4-Dinitrophenol	<10	10	120-83-2
2-Methyl-4,6-Dinitrophenol	<10	10	534-52-1
Hexachlorobutadiene	<10	10	87-68-3
Hexachlorocyclopentadiene	<10	10	77-47-4
Hexachloroethane	<10	10	67-72-1
Indeno(1,2,3-cd) pyrene	<20	20	193-39-5
N-Nitrosodimethylamine	<10	10	62-75-9
N-Nitrosodiphenylamine	<10	10	86-30-6
N-Nitrosodi-n-propylamine	<10	10	621-64-7
1,2-Diphenylhydrazine	<10	10	122-66-7

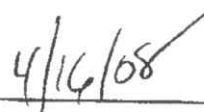
Note: Samples received in laboratory on ice.

Signature: _____



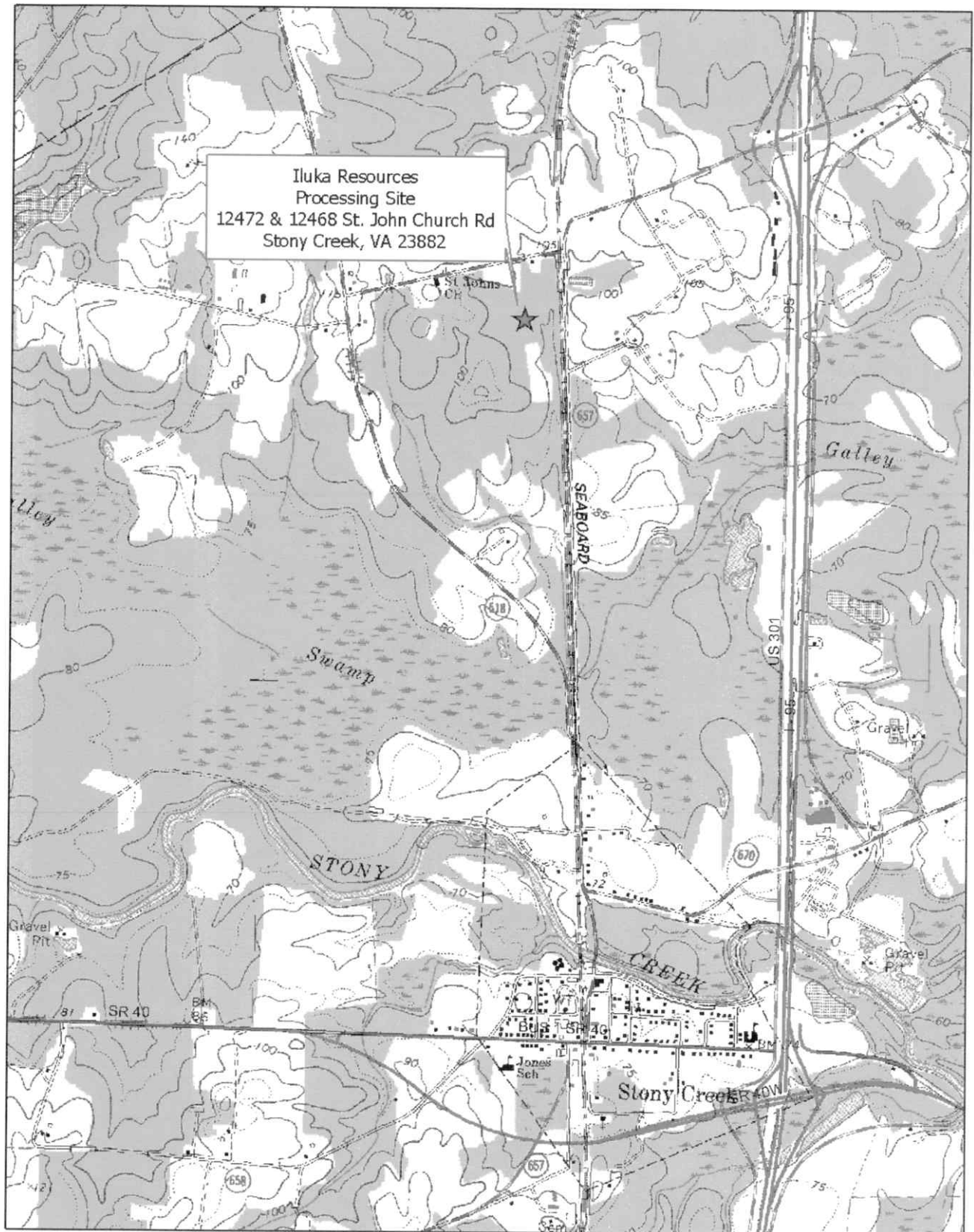
Parry L. Bragg
Laboratory Manager

Date: _____



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N



0.5 Miles

Figure 1.
Iluka Resources
Processing Site Location Map

